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M3A1 Scout Car

Walk Around®

David Doyle

Squadron Signal® Publications

M3A1 White Scout Car

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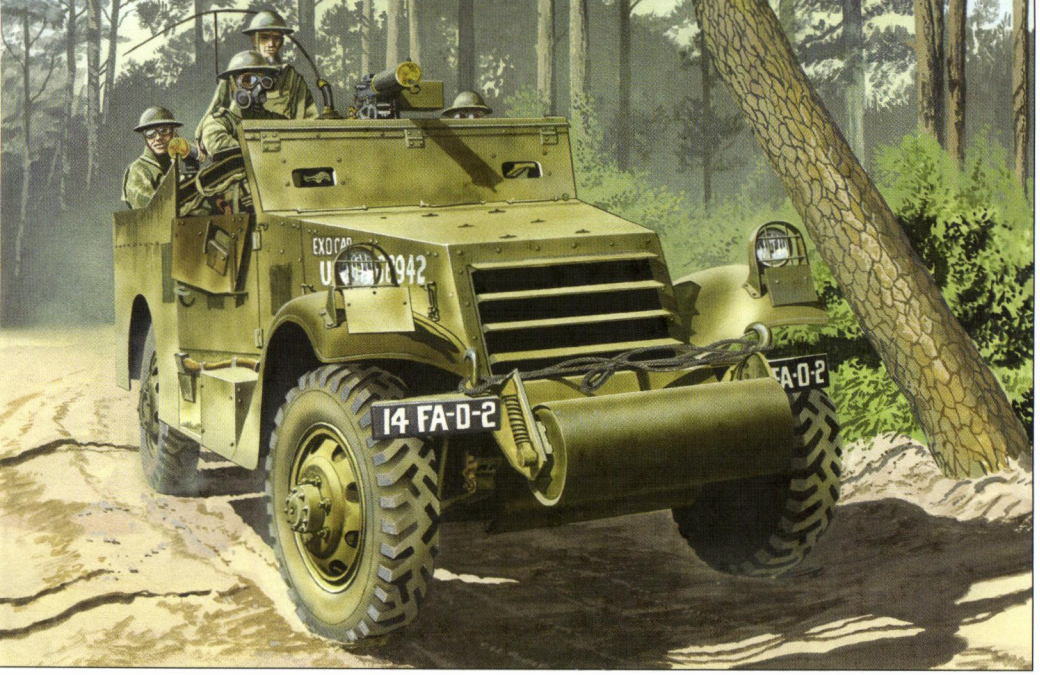
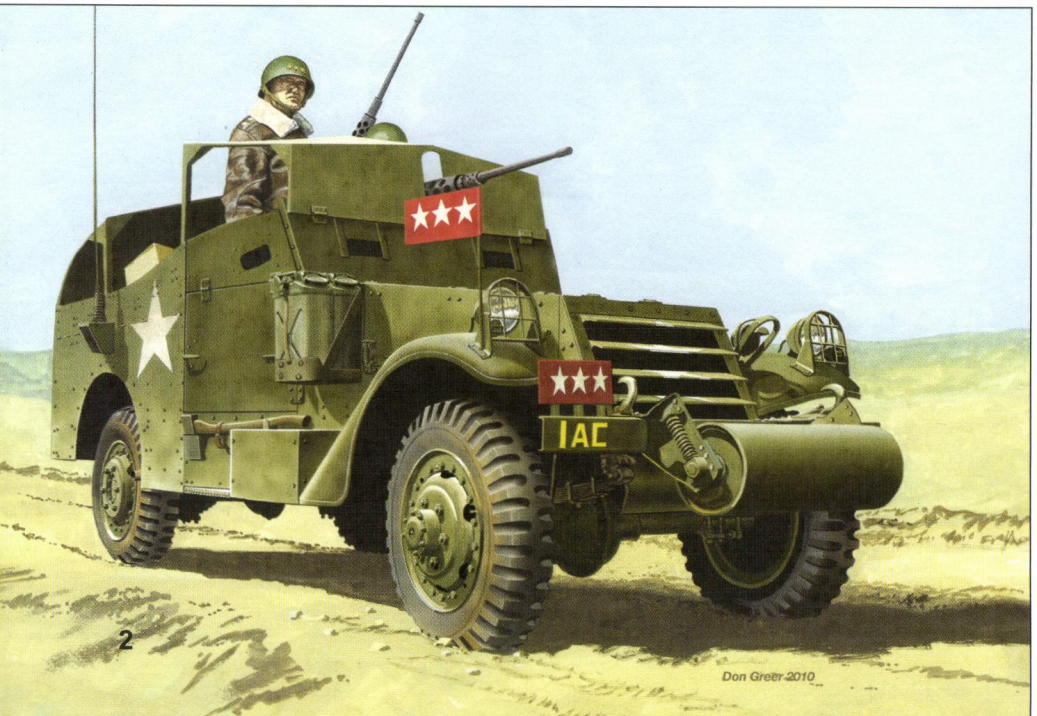
Squadron Signal® Publications



(Front Cover) A very early M3A1 White Scout car performs prewar maneuvers Stateside. The vehicle commander has donned his protective mask. Lightly armored, fast and maneuverable, the scout car became the precursor to America's half tracks.

(Back Cover) Lt. Gen. George Patton rides in a modified M3A1 scout car as commander of 1st Armored Corps. The vehicle was later assigned to Maj. Gen. G. Keyes, 7th Army.



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(Title Page) The M3A1 Scout Car, as produced by White Motor Company, was considered only marginally successful, largely due to rapid advances in tactics and armored vehicles. However, the Scout Car would serve as the base vehicle from which a family of halftracks was developed.

Acknowledgments

This book would not have been possible without the generous assistance of Tom Kailbourn; John and Beverly McCleaf; Kevin and Thea Kronlund; Ron Grasso; Fred and Lani Ropkey and Skip Warvel at the Ropkey Armor Museum in Crawfordsville, Indiana; Steve Preston; Jacques Littlefield and the Military Vehicle Technology Foundation; Chris Hughes; The National Museum of Americans in Wartime; Greg Wolanin; Dennis Spence of Portrayal Press; and especially my wife Denise – who patiently traveled with me coast to coast gathering these photos.

Introduction

Debate has raged over the merits of wheeled versus track-laying armor since the early days of mechanized combat. Just prior to the U.S. entry into World War II, the development of armored scout cars was a part of this debate.

The lineage of the White M3A1 scout car can be traced directly to the Scout Car T7, tested from July through November 1934. The T7 was built by the Indiana Motortruck subsidiary of White. In a departure from previous scout car designs, which were built on passenger car chassis, the T7 was based on the Indiana model 12x4 1 ½ ton 4x4 truck chassis. In 1934, 76 T7 scout cars were produced and were standardized as the M1.

A scout car built by the Marmon-Herrington Company was also tested from 13 to 30 September 1937. This vehicle was designated the T13, and despite the difference in builder, it more closely resembled the subsequent M3A1 than did the Indiana T7. Testing showed that the T13's 221-cubic inch Ford V-8 was not an adequate powerplant for the 7,710-pound vehicle.

In testing about a year later, the Corbitt Company's T9 scout car was found superior to the T7. The Corbitt T9 was later redesignated the M2E1, and 20 were produced.

The next major step in scout car development was the White M2A1. This vehicle was tested under program 5353 at Aberdeen Proving Ground from 9 to 30 September 1937. The M2A1, which incorporated a 95-horsepower Hercules JXD 6-cylinder engine, was found superior to any scout car previously evaluated by the U.S. Army.

The M2A1 design was further improved, resulting in the 1937 M3 scout car. The M3 was very similar to its successor, differing most obviously in the shape of the rear body. Whereas the familiar M3A1 has slab sides and wheelwells beneath the internal toolboxes, the M3 had a narrower body, with rectangular external wheel wells. At the front the M3 did not have the front-mounted unditiching roller, but at the rear, it did have a door. The tourelle mount of the M3A1 made a rear door impractical. White built only about 60 of the M3, but the basic shape of the scout car had been set.

The pilot model of the M3A1 was driven from the White plant in Cleveland, Ohio, to Aberdeen Proving Ground, Maryland, for testing in mid-June 1939. Aberdeen Proving Ground personnel tested the vehicle between 28 June and 18 July under program 5395. The earliest M3A1s differed from later production models in various details. Initially, the "greenhouse" type windshield was retained. This system featured a protruding windshield with a side "wing" on each side. The windshield was designed to be folded forward when the armor cover needed to be lowered. Large wingnuts served to secure the glass panel in either the upper position, or to two small "ears" on the side of the hood when the glass was lowered. Later-production vehicles had the more familiar removable glass panels that were to be removed prior to lowering the armor cover.

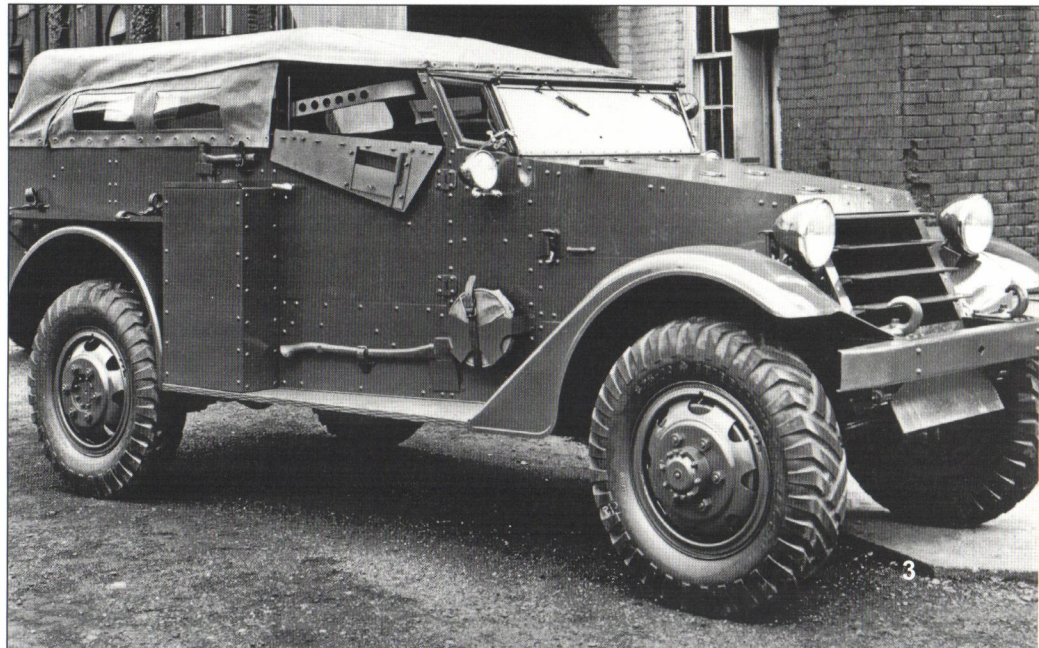
Also characteristic of the earliest vehicles was a right-side mounted spotlight and a lack of brushguards for the headlamps. Early M3A1s also had a cast shield mounted on the doors baring the crossed sabers of the cavalry. Some references state that these were added by the using arm, but in reality they were installed during the manufacture of the vehicle.

Internally, the horsepower rating of the 320-cubic-inch-displacement Hercules JXD was increased to 110. This was accomplished primarily by raising the engine speed by 200 rpm, raising the compression ratio, and improving the valve train. All the M3A1 scout cars were 4x4, but unlike most four-wheel-drive tactical vehicles, White used a full-time four-wheel-drive system. The operator cannot disconnect power from the front axle.

Series production of the M3A1 Scout car began in 1940 and continued until March 1944. The initial 24-vehicle order was quickly followed by another order for an additional 274 vehicles. These 298 vehicles, plus the pilot vehicle, were all finished by 18 April 1940. Completed chassis were driven to the nearby Diebold Safe and Lock Company. Diebold fabricated and installed the armor plating, which was ¼ inch thick and of the face-hardened type. After installation of the armor, the cars were driven back to the White plant for final assembly and inspection.

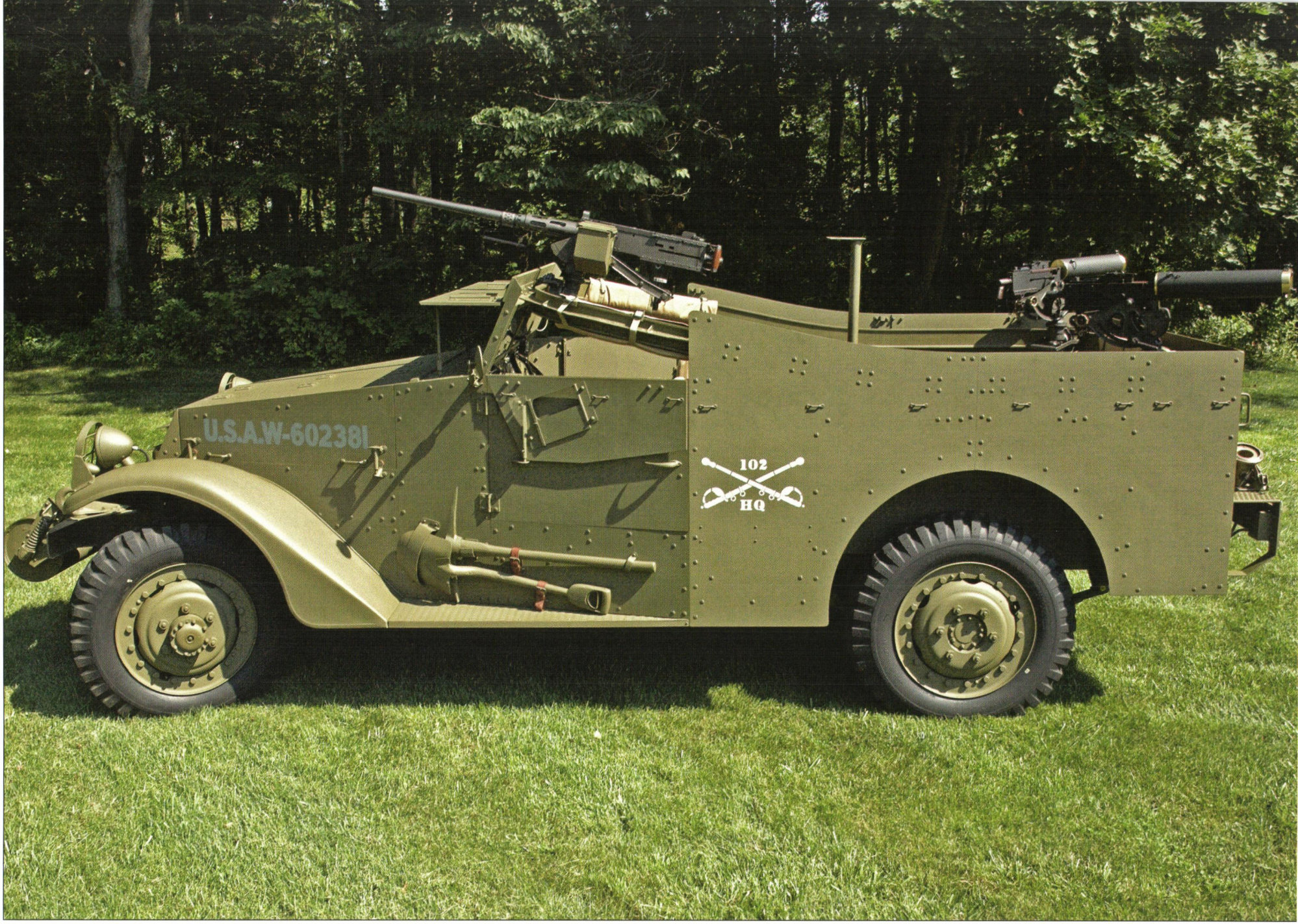
Armament was a variety of machine guns mounted by means of trolley and pintle to a skate rail that completely surrounded the interior of the fighting compartment. In addition to wide use by the U.S. Army, the Scout Car was also supplied in large numbers to the Soviet Union, and some were even used by Great Britain and French troops. The Scout Car fell out of favor with U.S. forces, being replaced by better-protected and more mobile vehicles. However, they continued to serve with other nations, notably Greece, well into the Cold War era. French forces used the vehicles in Vietnam as well.

The rear body compartment of this M2A1 is narrower than that of the familiar M3A1. The M2A1 lacked the front-mounted unditching roller seen on later models. There are brackets on the side to stow a collapsible canvas bucket, as well as the windows in the sides of the rear canvas. The holes in the web of the skate rail, just visible through the door, were intended to reduce weight. These holes were later eliminated to make the rail more rigid. The M2A1, M3 and early M3A1 vehicles had the protruding "greenhouse" type windshield. When in the "normal" position, as seen here, the glass supports the armored flap in the raised position. (Diebold, Inc.)



Early M3A1

This M3A1 was built fairly early in the production run, under the second contract. Aside from being equipped with combat rims, which were only introduced under the third contract, and an incorrect tread pattern on the tires, it is a virtually perfect example of an early White scout car.



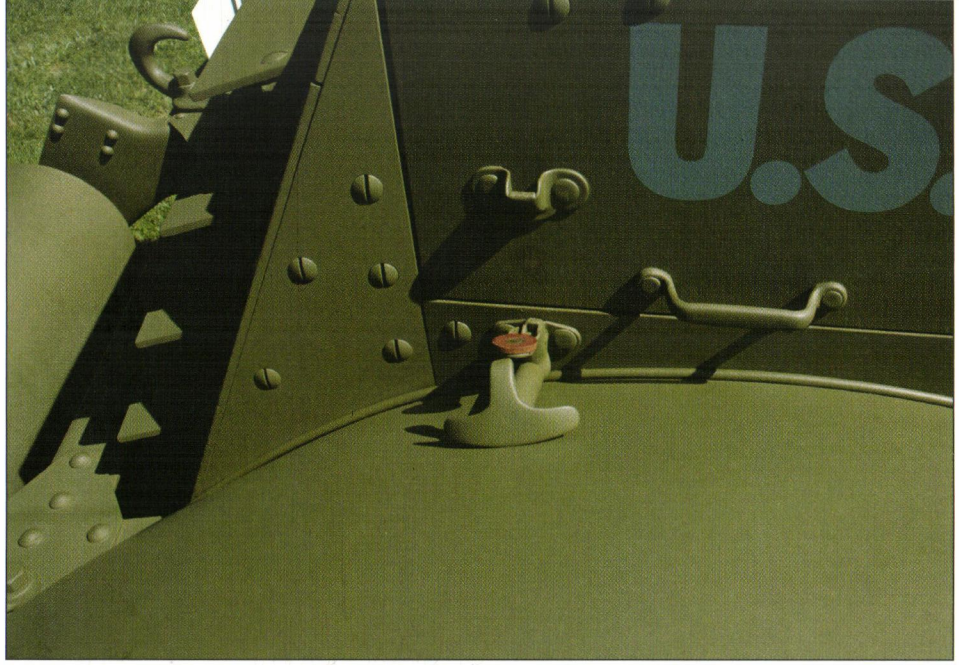
The scout car mounts an M2 .50-caliber machine gun and two water-cooled Browning .30-caliber machine guns. There is a heavy use of rivets in the construction of the body panels.

The roller incorporated into the front end is designed to help the vehicle negotiate ditches and obstructions. The roller drum is mounted between two reinforced brackets attached to the front bumper. Coil springs help buffer the shock when the roller comes into contact with a hard object.

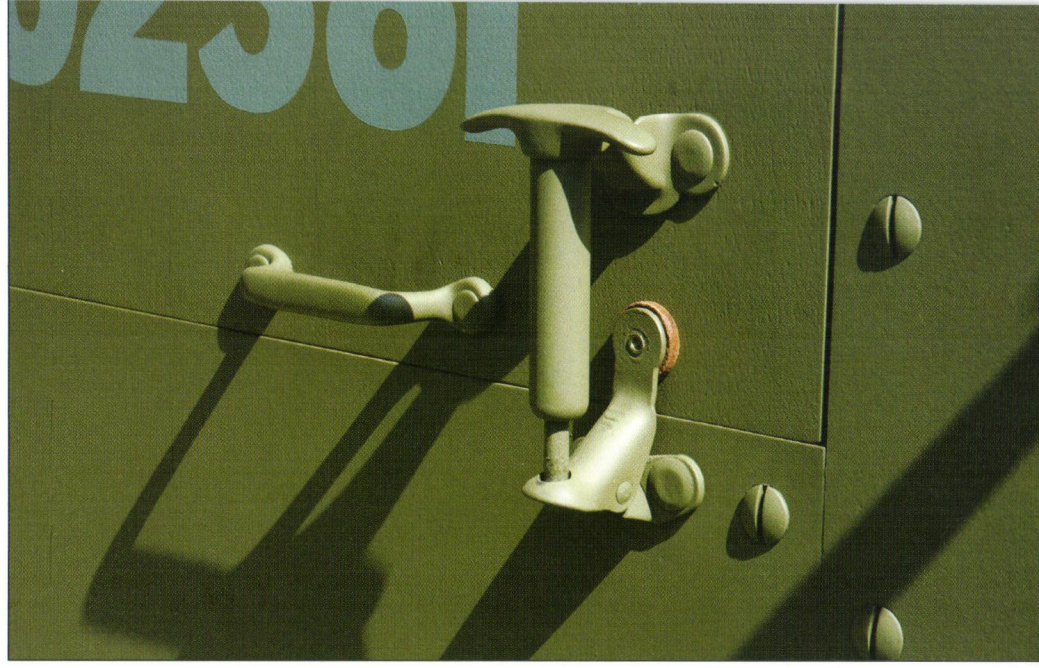
Two tow hooks are bolted to the top of the bumper. The headlight guards are durable, with large side braces bolted to the fenders. Just visible inboard of the nearest brace is the left blackout marker lamp, with the headlight to the rear of it.

This rear view of the left headlight assembly, shows how the electrical cable passed up through a rubber grommet in the fender. The headlight mount is a simple cylinder.

The pilot model M3A1 is seen here after its delivery to the Aberdeen Proving Ground for testing. It incorporates some features not found in most of the production vehicles, including a "greenhouse"-type windshield and dual spotlights.



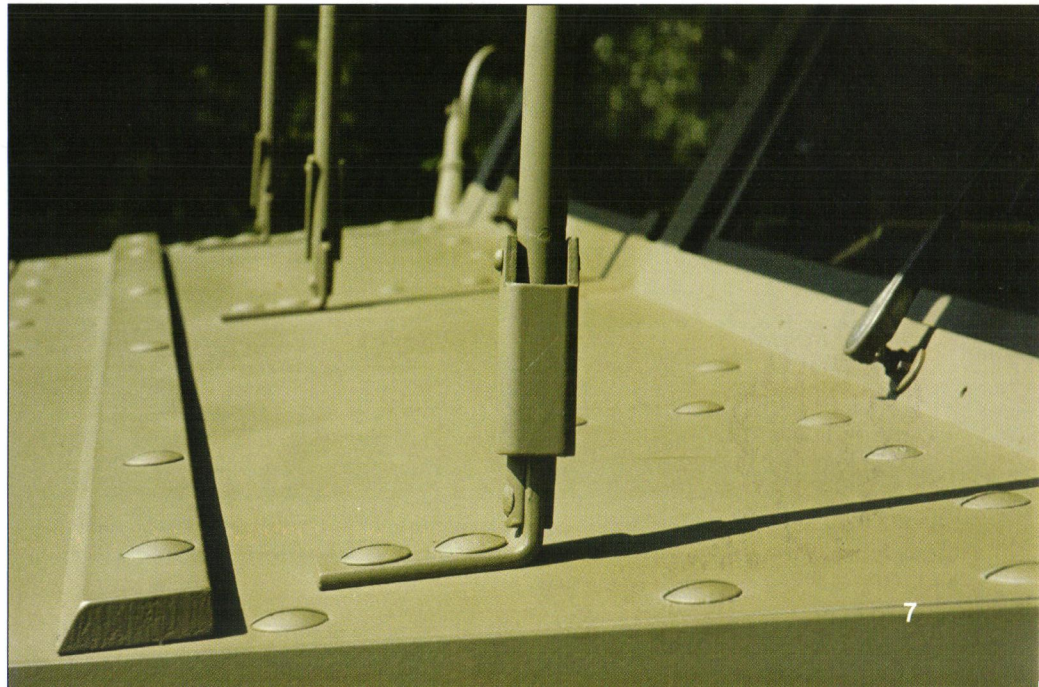
The left hood hold-down clamp is detached from the latch on the side of the hood. Two handles are attached to each side of the side of the hood, front and rear, to assist in lifting it. The front handle is shown here.



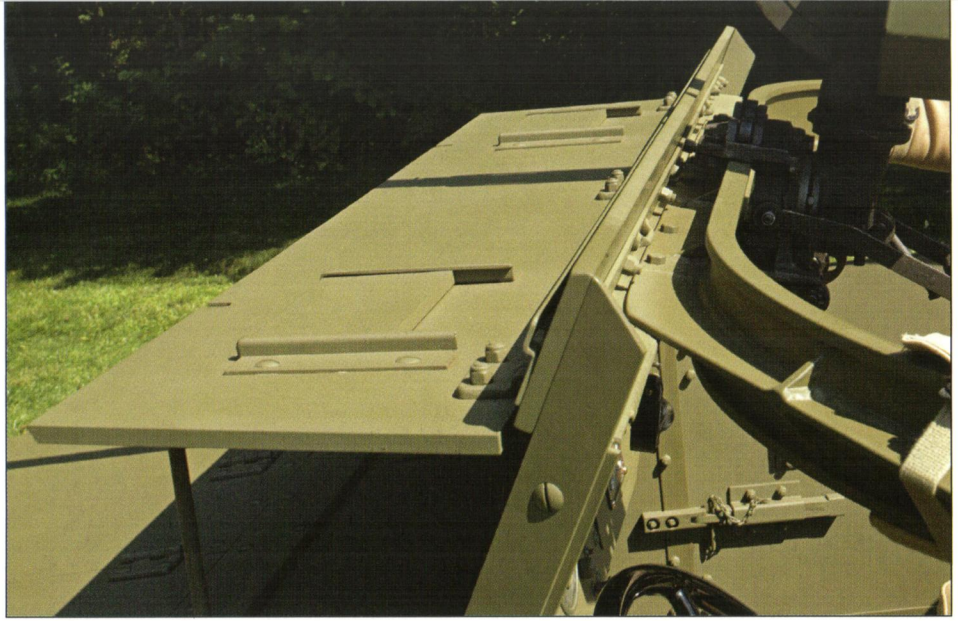
The rear of the left side of the hood has a grab handle and a hold-down clamp, seen here engaged with the latch on the hood. There is a cork disk on the toggle of the clamp to protect the paint on the hood.

Three props hinged to the cowl support the armored shield when in the raised position. The shield is hinged to the top of the windshield frame. When the shield is lowered, the props fold down onto the cowl.

The brackets that hold the props for the armored shield are attached to the cowl with large oval-headed bolts. This close-up focuses on the left bracket for the armored shield props.

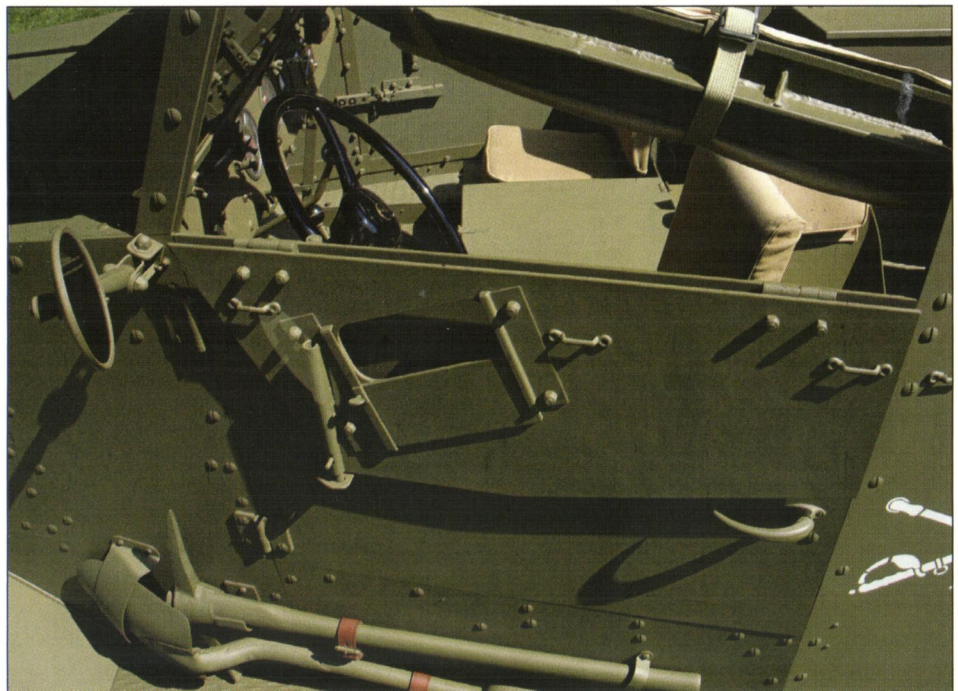


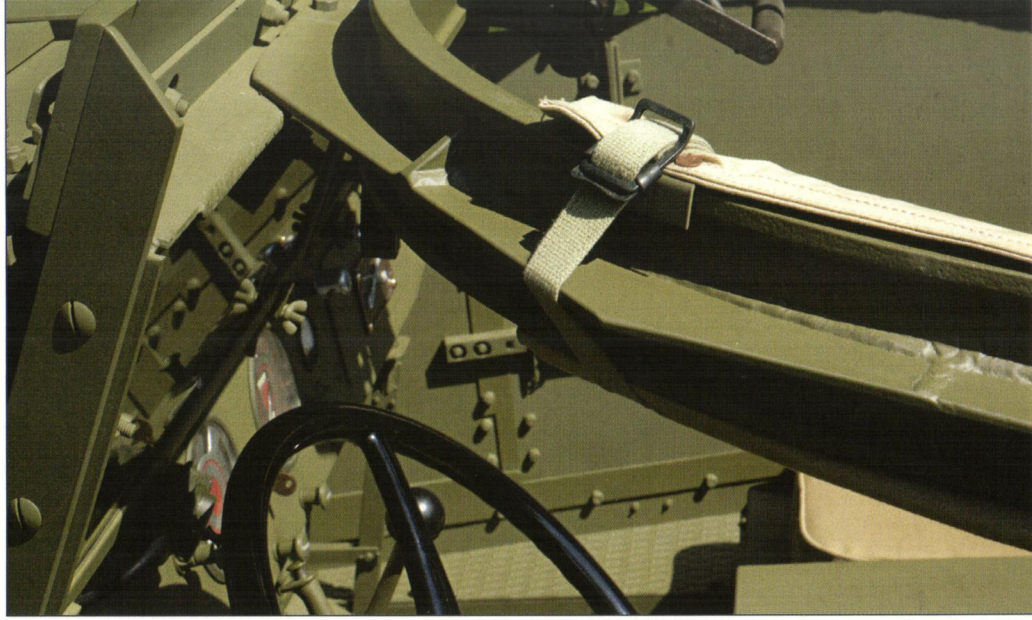
The M2 .50-caliber machine gun is on a pintle mount on a roller assembly, allowing the gun to be manhandled around on the continuous machine gun track, also called the tourelle or skate rail. An olive drab ammunition box is attached to the cradle. The barrel support, the cylinder to the front of the receiver, has elongated air vents, accurate for early-World War II examples of the gun.



The hinged shield is an armor plate 1/2-inch thick, as are the two sliding visor covers. The rest of the armor on the vehicle's body is 1/4-inch thick.

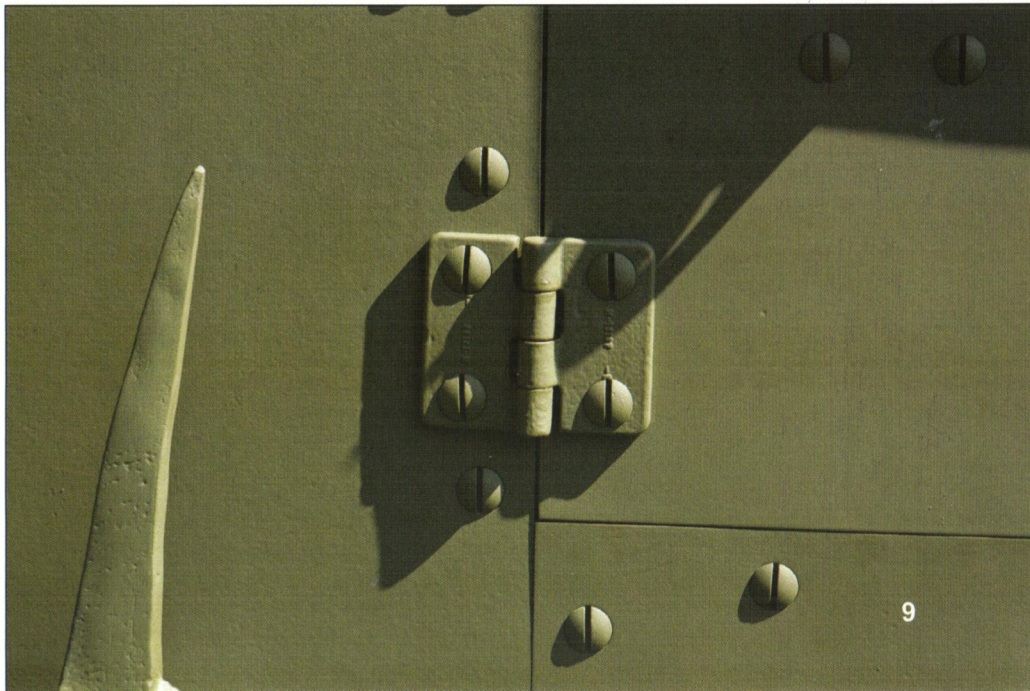
The side shield of the driver's door is lowered, exposing details of the inside surface. The sliding cover for the vision port can be locked in place by the thumbscrew on the forward slide. Forward of the port is a vertical pin housing. When the shield is in the raised position, a vertical pin on the lower half of the door is pushed up into the housing, to secure the shield in place. When lowered, a pin in the housing locks into a lug on the outside of the door, as seen here.

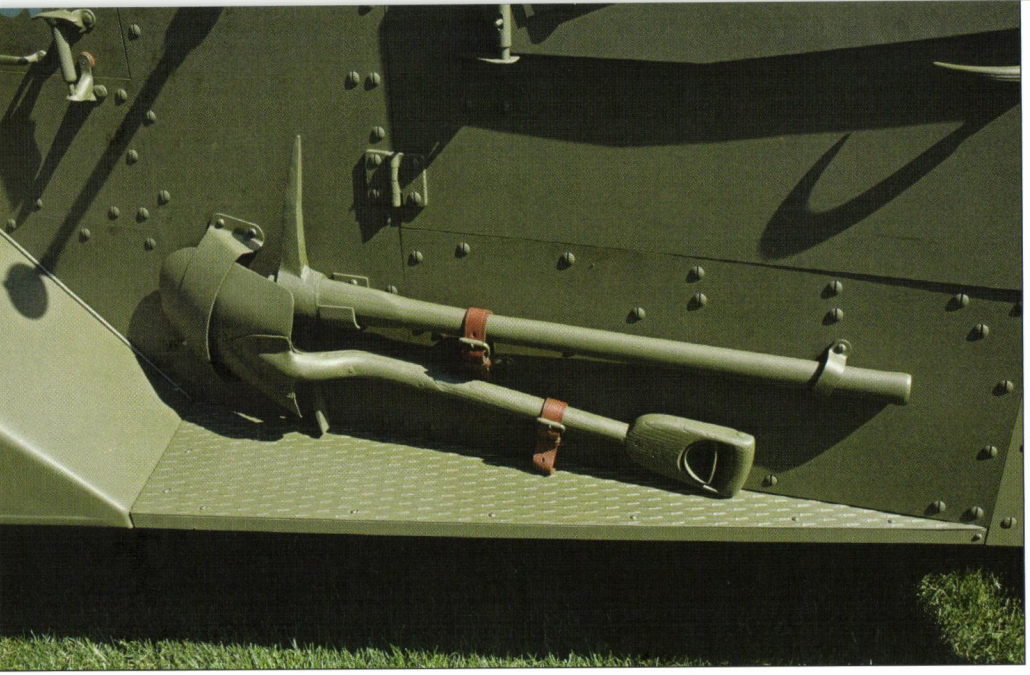




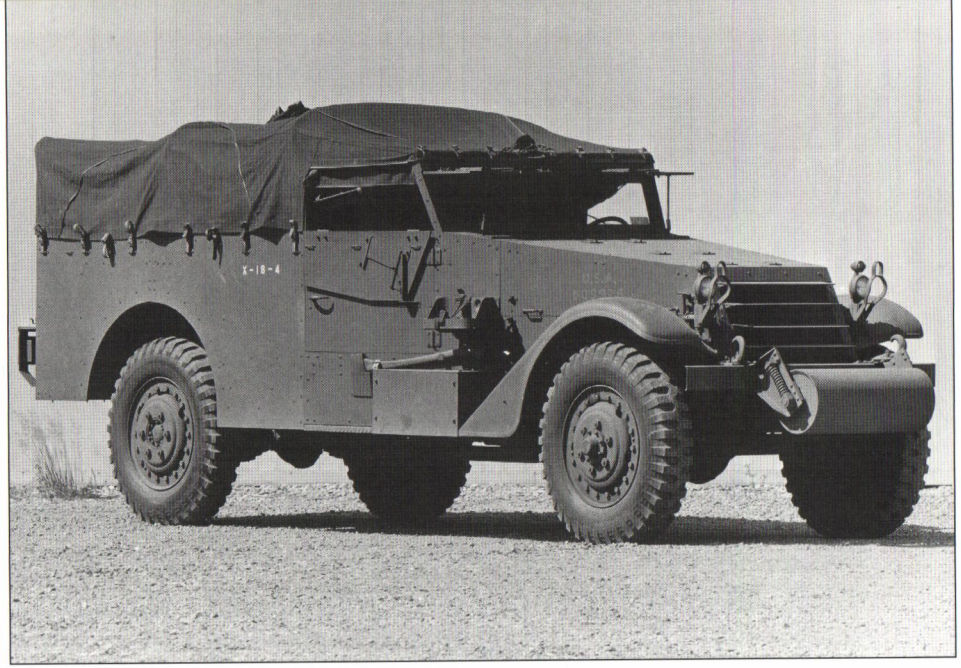
This view of the front left corner of the crew compartment shows the attachment points of the machine gun track to a flange at the top of the windshield frame. Attached to the track by a webbing strap is a crash pad. These were installed to protect the heads of the driver and front passenger.

The pick head is to the left of the lower hinge of the driver's door. The leaf-type door hinges were attached to the doors and body with large, oval-headed, slotted screws fastened on the inside with nuts. Similar screws and nuts were also used to fasten body plates to the framework. The screw's slots are arranged vertically on this vehicle.



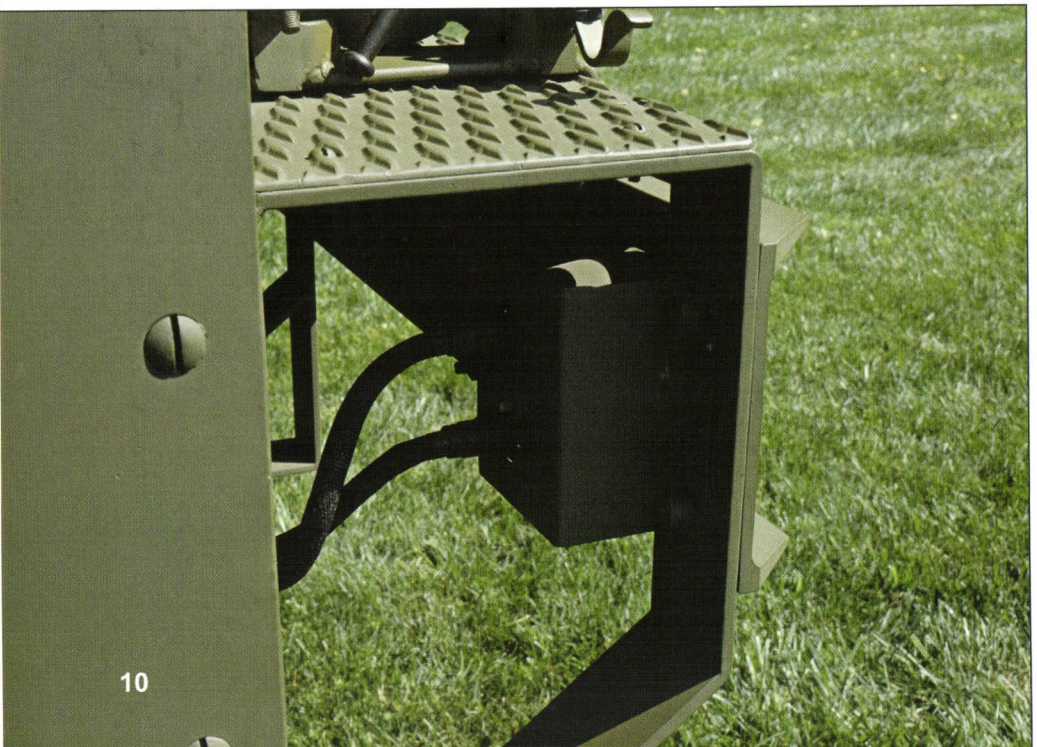


Pioneer tools, a shovel and a pick, are secured in their mounts (officially called clips) with leather straps below the driver's door.

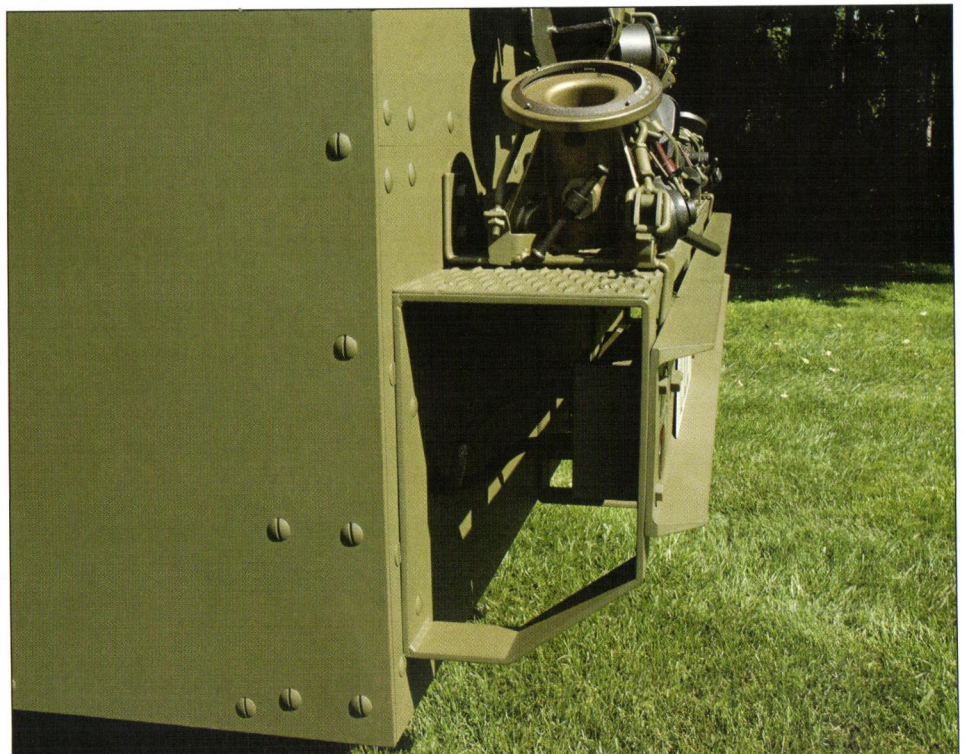


This is a rare diesel-powered M3A2 as distinguished by the detachable headlights and combination of late body and lack of side exhaust. (U.S. Army)

The left tail light assembly and wiring are visible in this side view of the left rear bumper bracket.

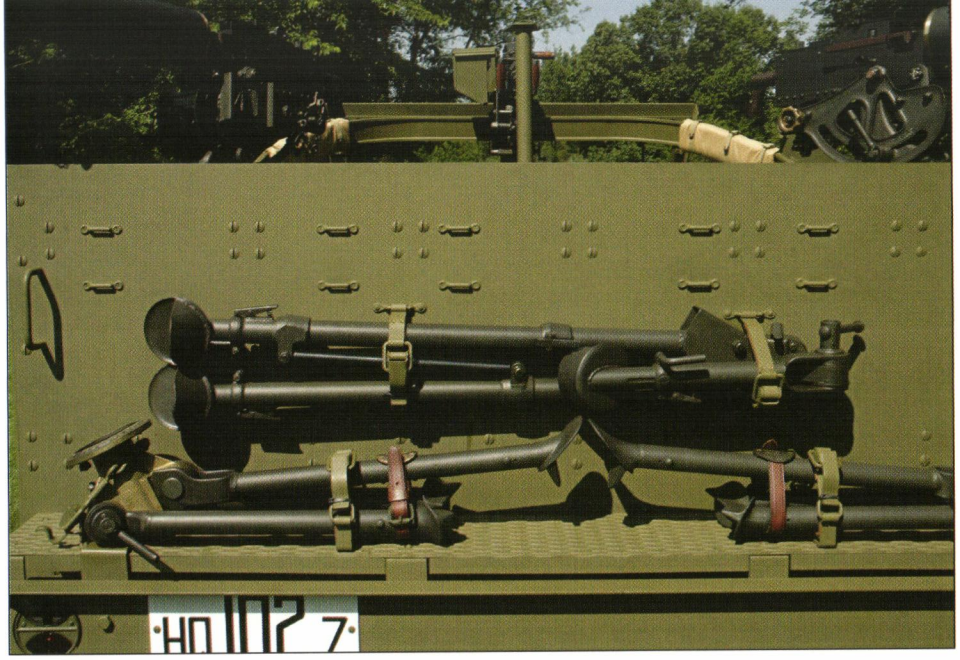


The rear bumper is bolted to brackets on the outboard side of the rear body plate and atop it is a running board made of a strip of diamond plate.

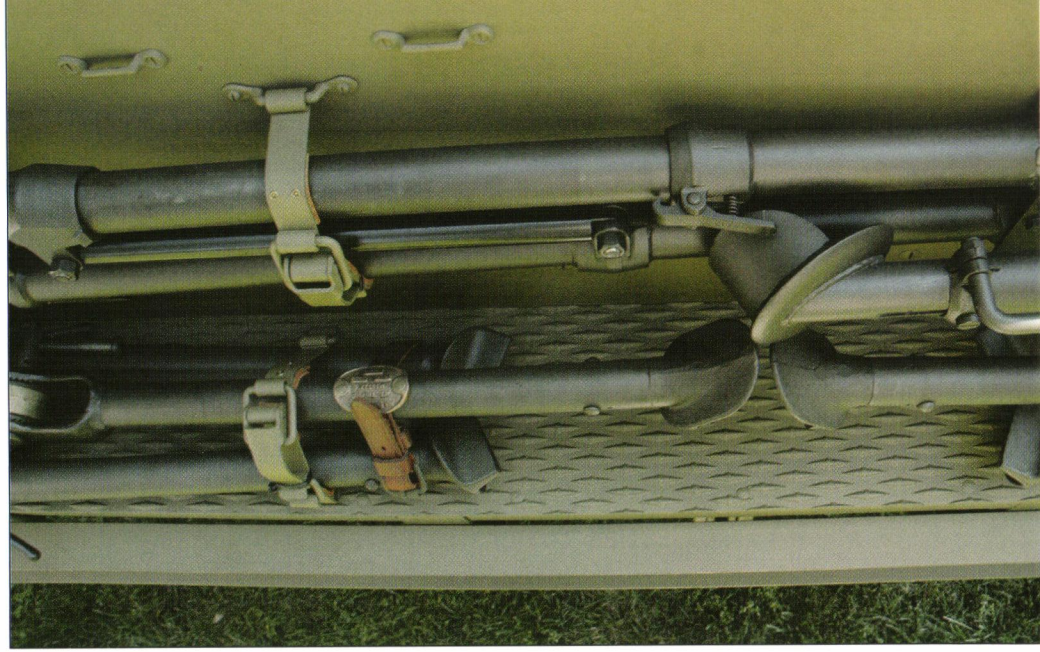


The body plates of the M3A1 scout car are peppered with oval-headed screws. Sets of machine screws secure the machine gun track to the upper part of the body. A row of footman loops across the body plates is intended to secure a canvas top over the vehicle. On the diamond-plate running board atop the rear bumper are two M1917A1 tripods for the .30-caliber machine guns.

The rear of the M3A1 presents a low-cut appearance. Although the October 1942 technical manual for the M3A1 recommended a total complement of no more than two machine guns for the continuous track, a .50-caliber and two .30-caliber machine guns were frequently mounted.



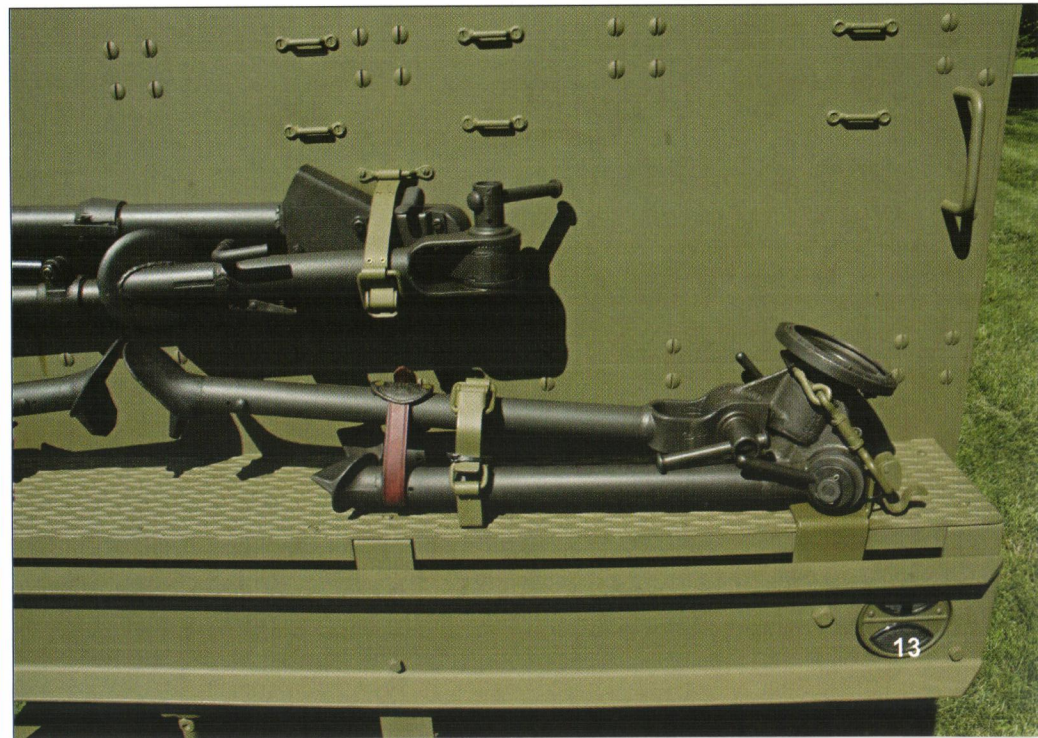
In addition to the two .30-caliber machine gun tripods on the diamond plate above the bumper, an M3 tripod mount for the .50-caliber machine gun is stored on the rear of the body. It is suspended by webbing straps from two footman loops.

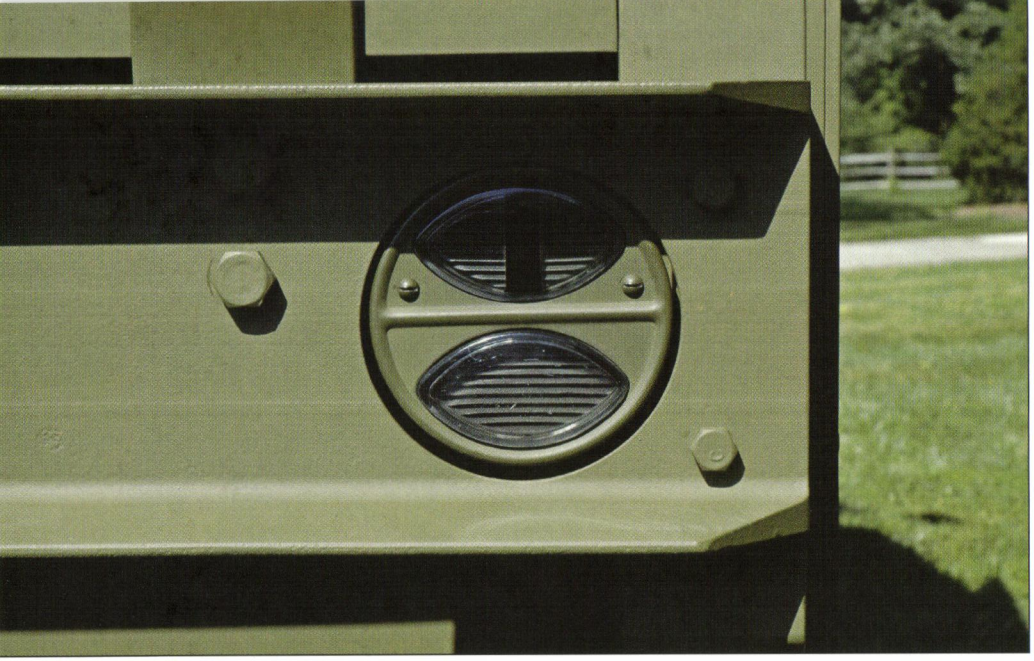


The three machine gun tripods are seen from overhead, secured to the vehicle. There is a brass nomenclature plate on the tripod leg to the lower left.

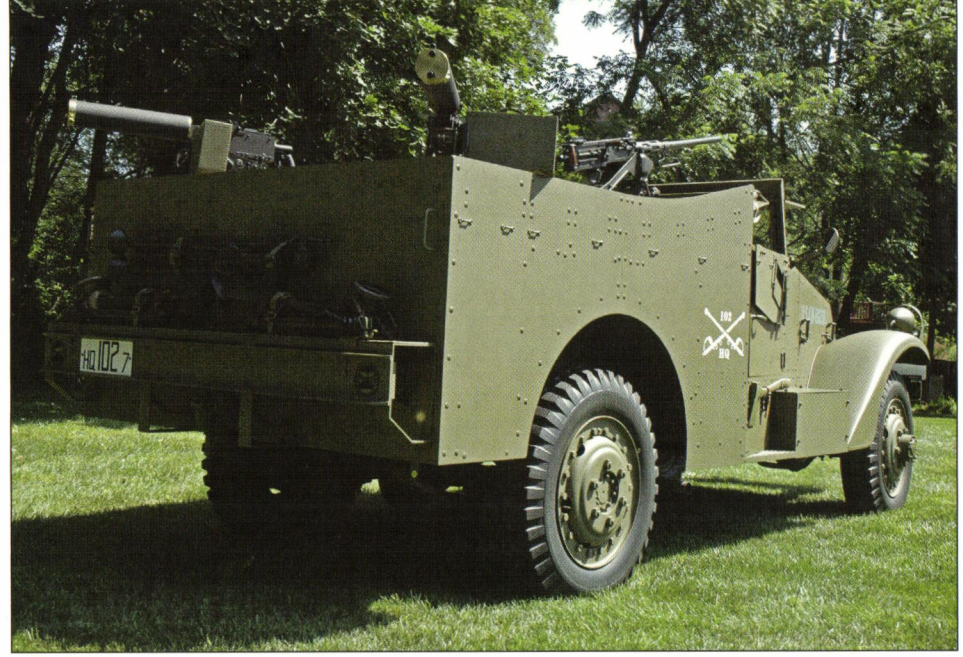
The left tail lamp assembly consists of a blackout tail lamp element at the top and a service tail and stop light at the bottom.

This view of the right side of the rear bumper and diamond plate also highlights one of the grab handles provided on each side of the rear body plate. The design of the rear bumper and the placement of the right tail light assembly are also illustrated.



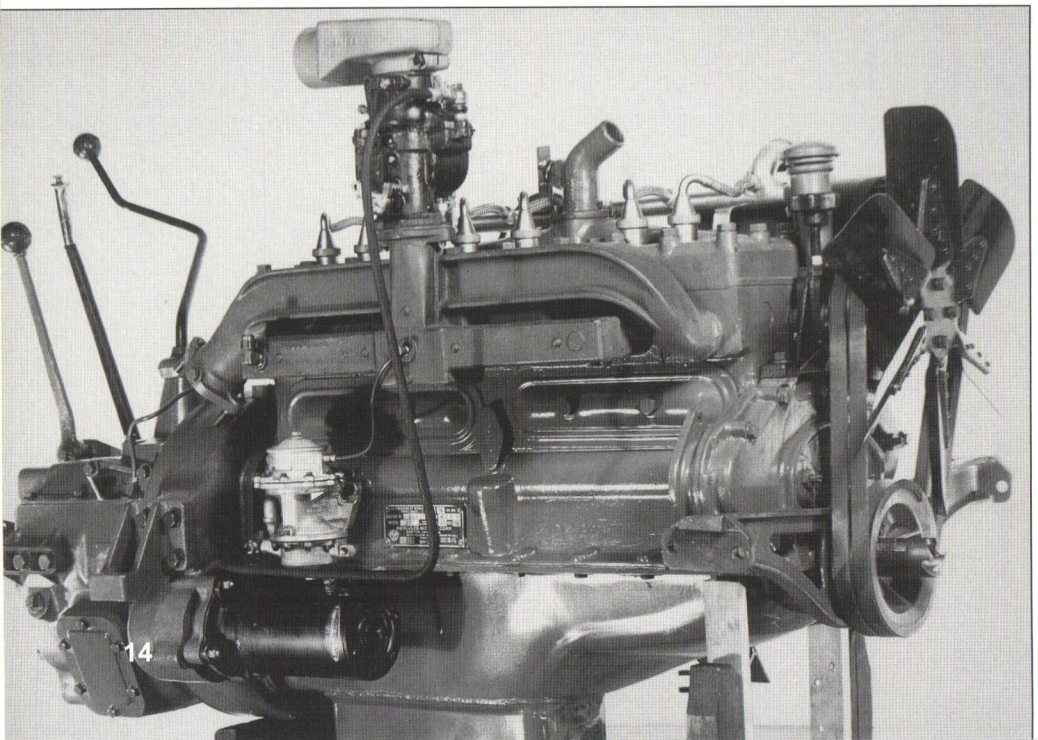


The right tail lamp assembly includes a blackout tail lamp at the top and the blackout stop light at the bottom.

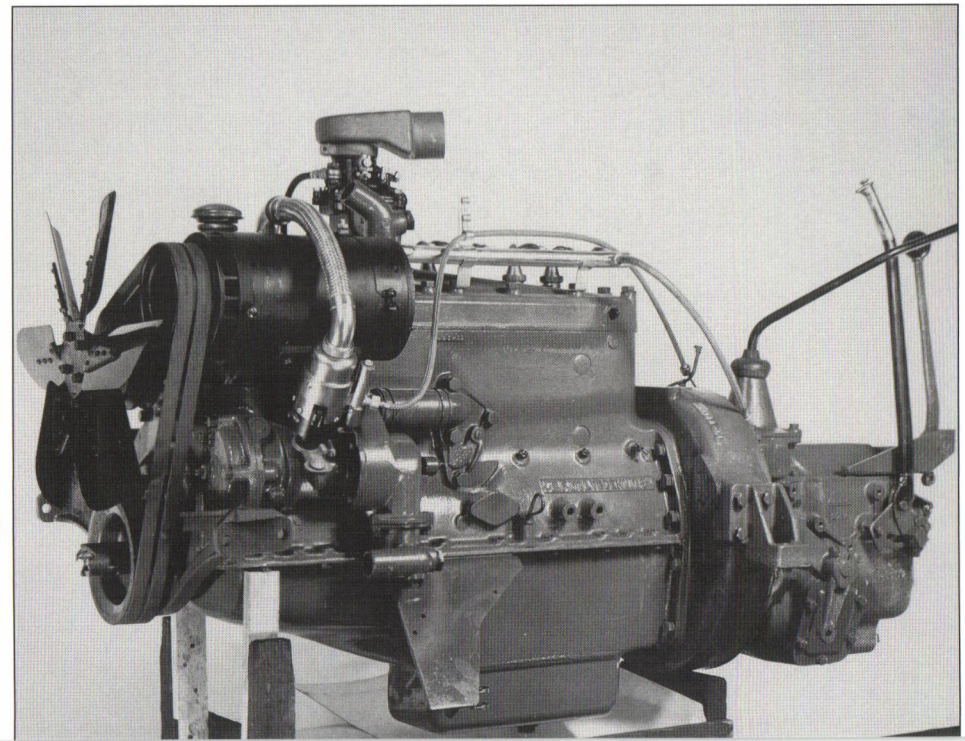


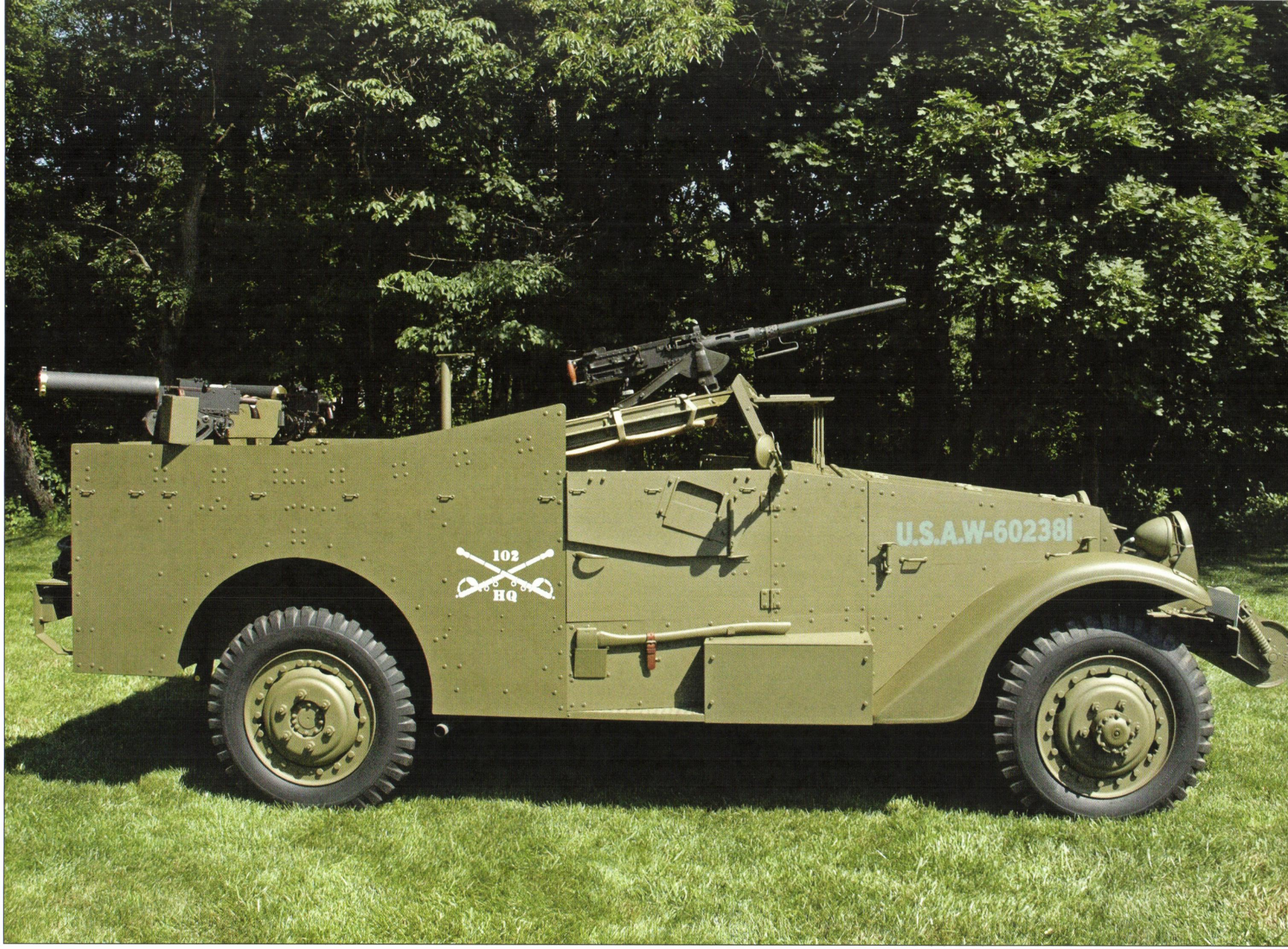
Unlike later vehicles, early-production White scout cars, like this M3A1, had no rack for a 5-gallon liquid container in front of the right door.

The Hercules JXD powered the M3A1 scout car, along with the Studebaker US6 and Ford M8/M20 armored cars, although details, including foundry marks, varied among applications. (American Truck Historical Society)



In the Scout Car, the 320 cubic-inch, 110 horsepower, JXD was fitted with a shielded ignition harness that minimized radio interference. The four-speed transmission is mounted on the rear of the engine. (American Truck Historical Society)

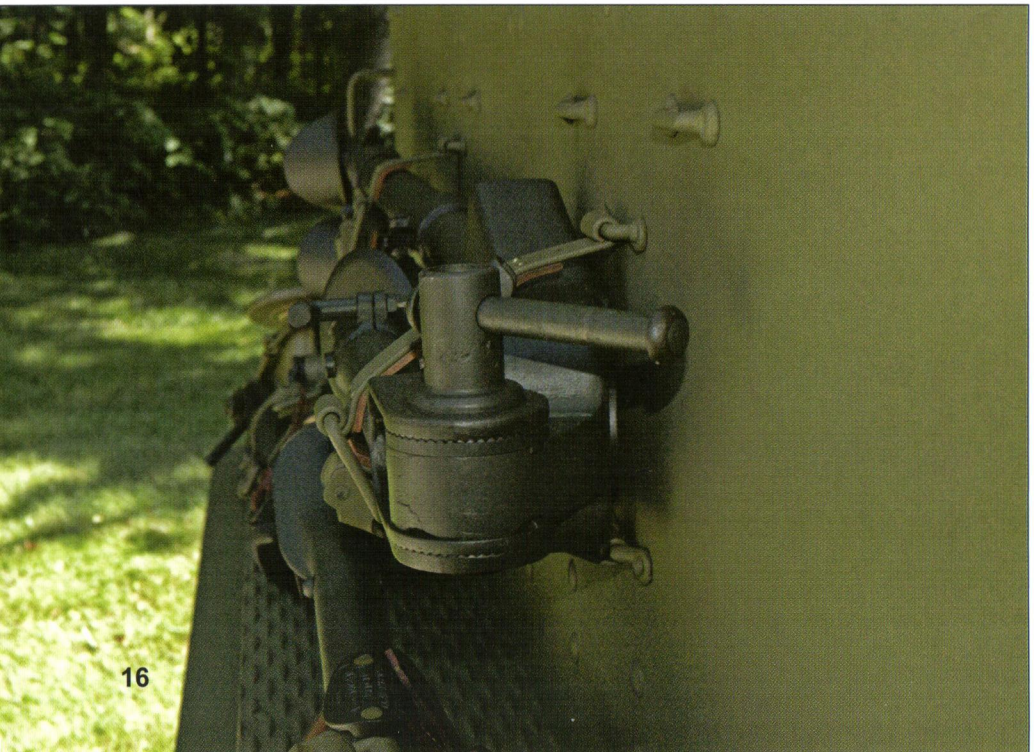


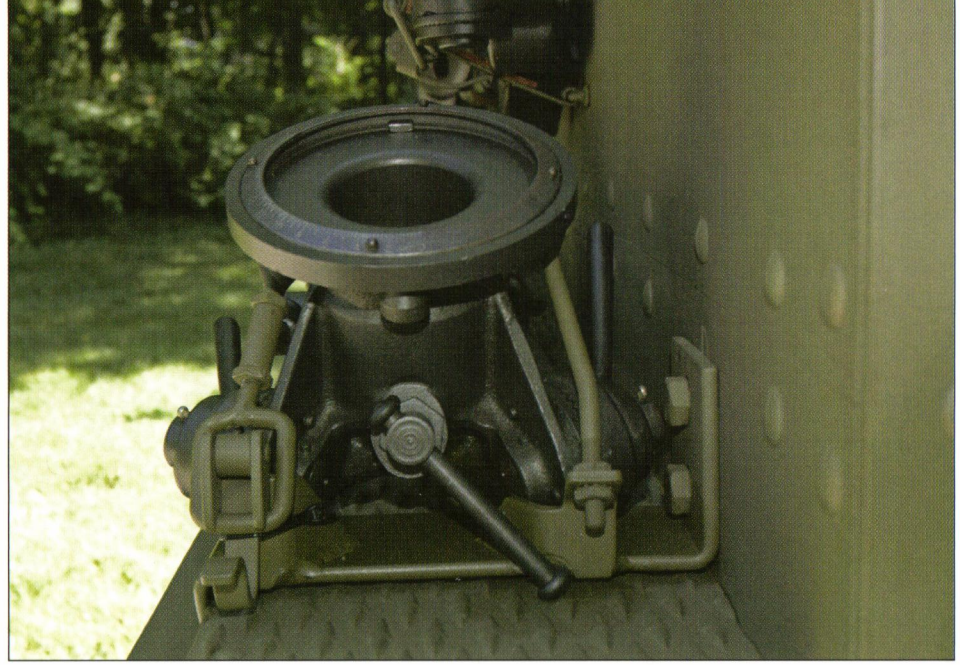


The front fenders are removable pressed metal units. Two support brackets are welded to the underside; the rear one is bolted to the body, and the front one is bolted to the frame.

Tubular, telescoping legs allow the height of the M3 tripod mount for the .50-caliber machine gun to be adjusted up or down. The two M1917A1 tripod mounts also are of variable height, but without telescoping legs.

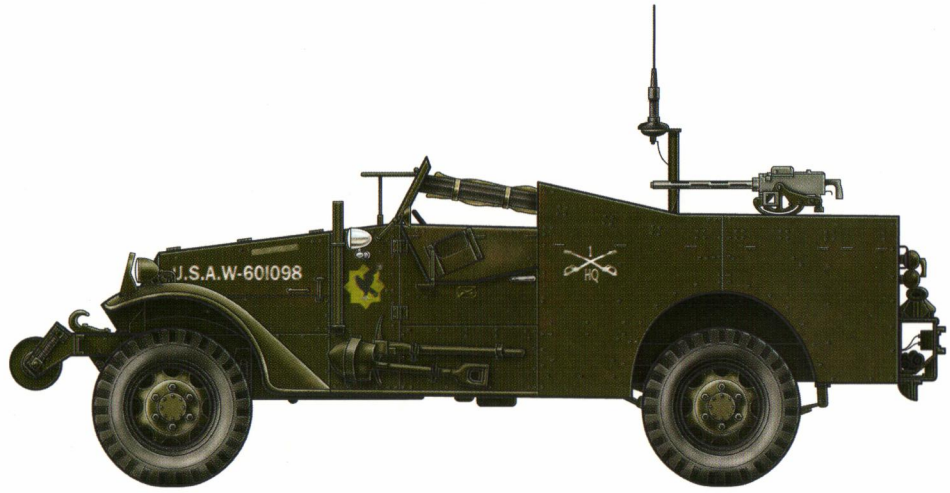
The stored M3 tripod, including a locking clamp handle, is seen from the right.

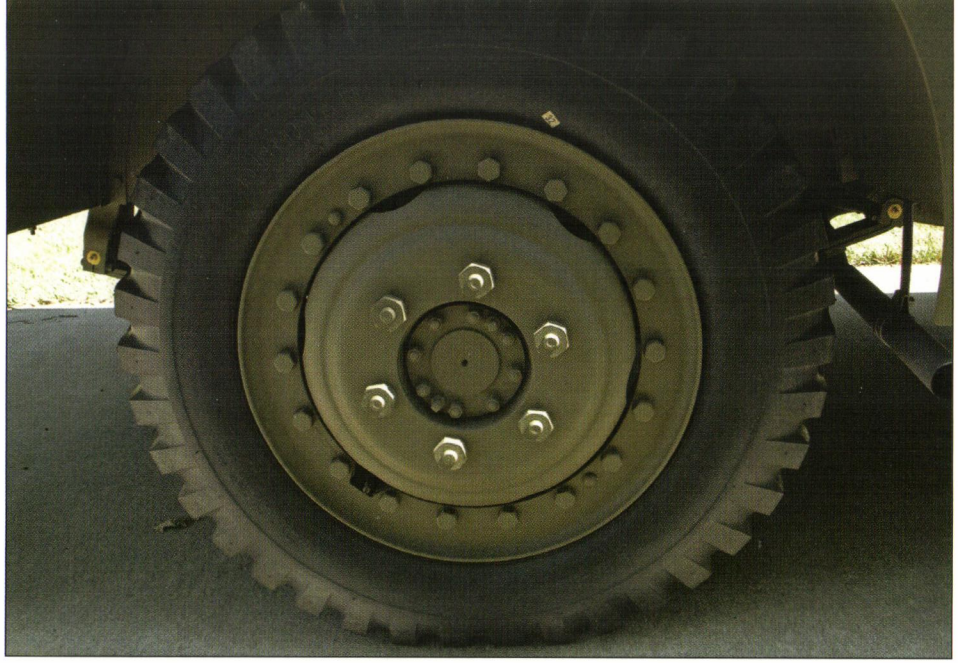




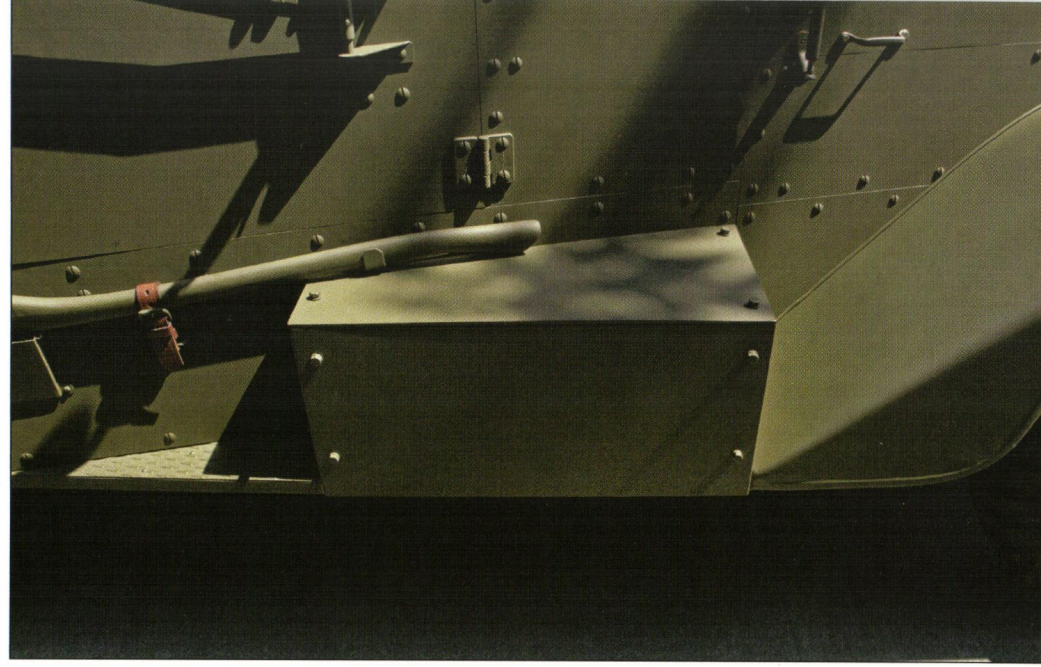
The pintle sleeve (or socket) and pintle clamp handle of a M1917A1 tripod appear in this view.

M3A1 registration number W-601098 was assigned to Headquarters, 1st Cavalry, in 1940. The regiment's insignia, a hawk inside an eight-pointed star, was on the cowl.



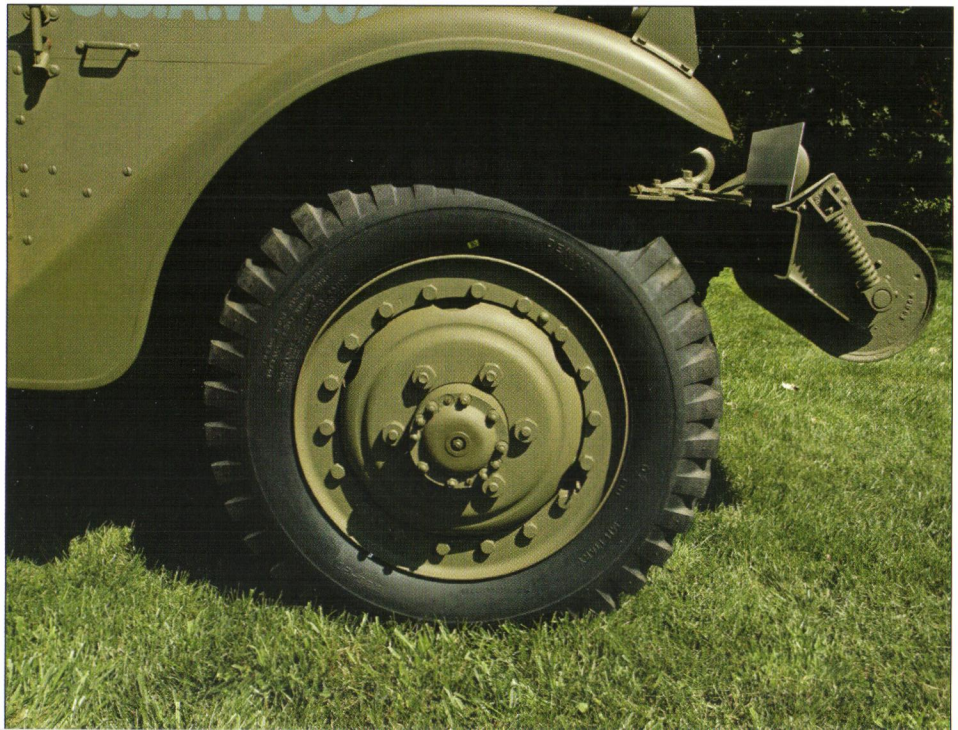


The actual wheels used on early M3A1s were size 20x7, of a steel-disk, spoked type. The specified tires were 8.25x20 with mud- and snow-grip treads. The engine exhaust can be seen to the right.



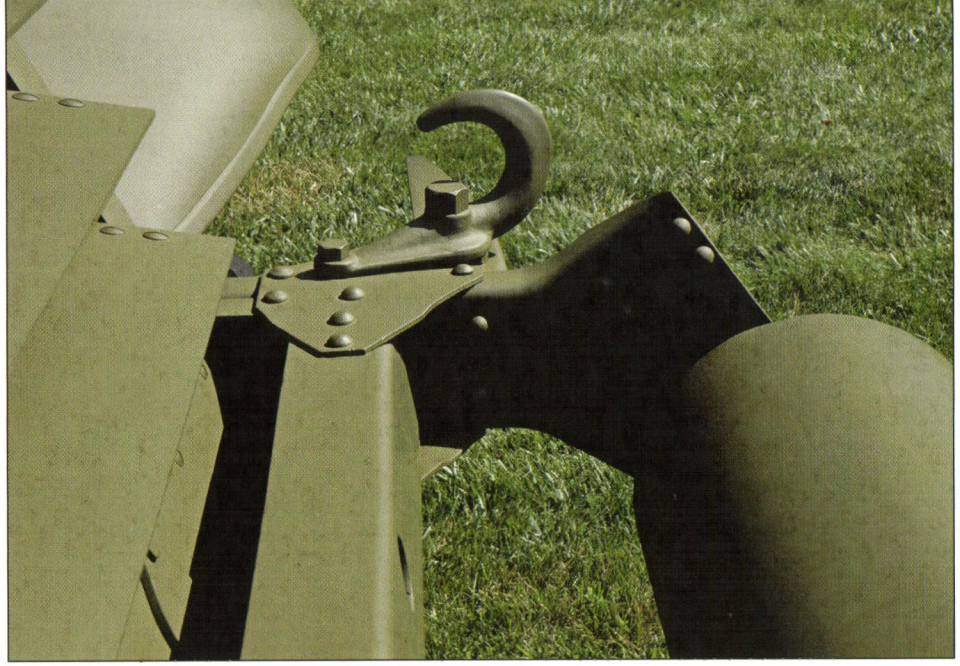
The battery box is above the right running board. The side and top plates must be unbolted to access or remove the battery, which is a six-cell, 25-plate lead-acid type with a rating of 168 ampere hours. Stored above the box is an axe.

The front fenders are pressed steel with turned-over outside edges, forming a reinforcing bead.



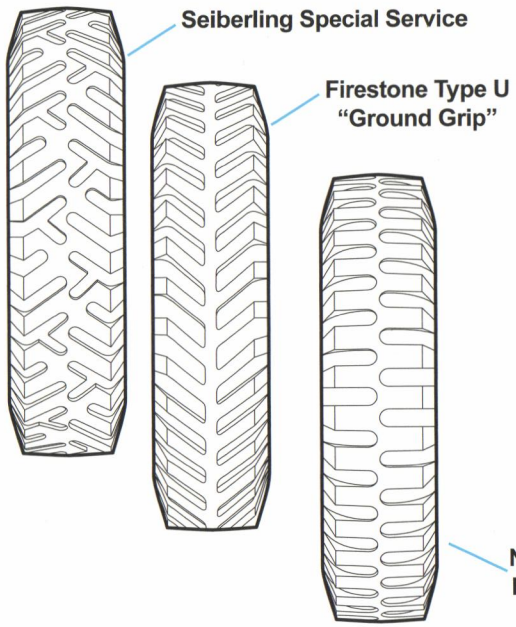
The right headlight and brush guard are seen in profile. The registration number on the side of the hood is painted in blue drab.

Cast onto the side of the roller is its part number: E3804. Part numbers are also cast onto the sides of the roller spring bracket and the tow hooks.

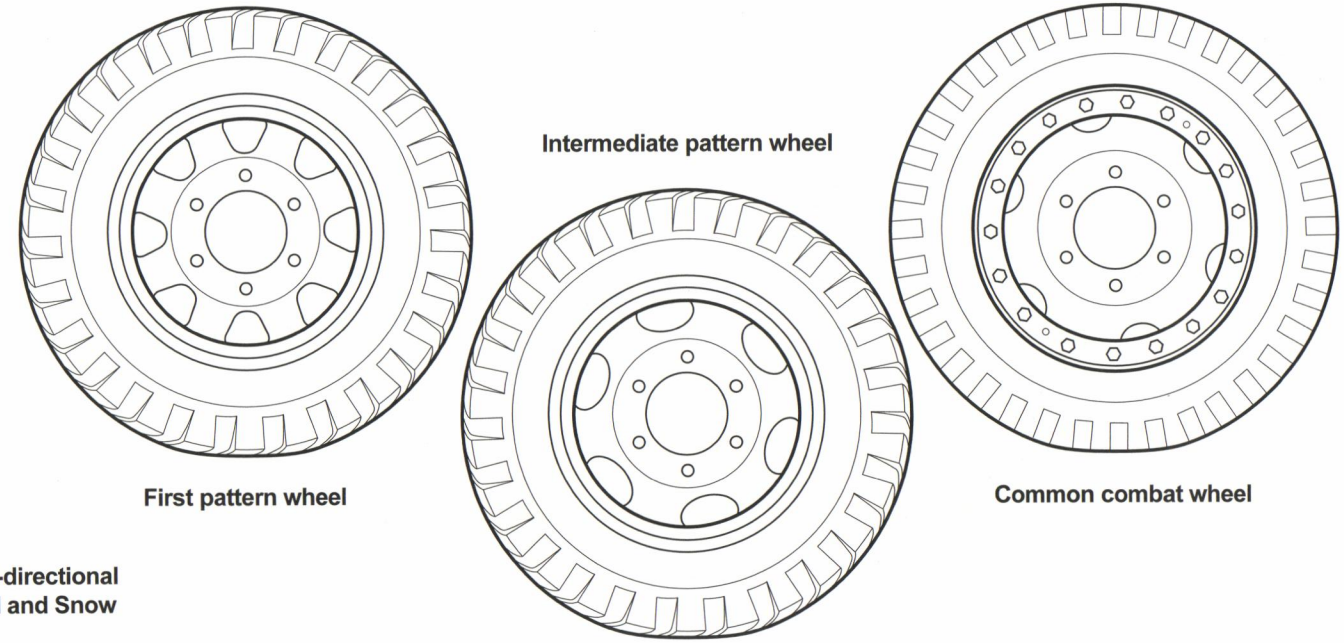


The inner side of the left frame is connected to the front bumper. The tow hook is attached on top of a gusset strengthening the frame-bumper joint.

Tread Patterns



Wheel Styles

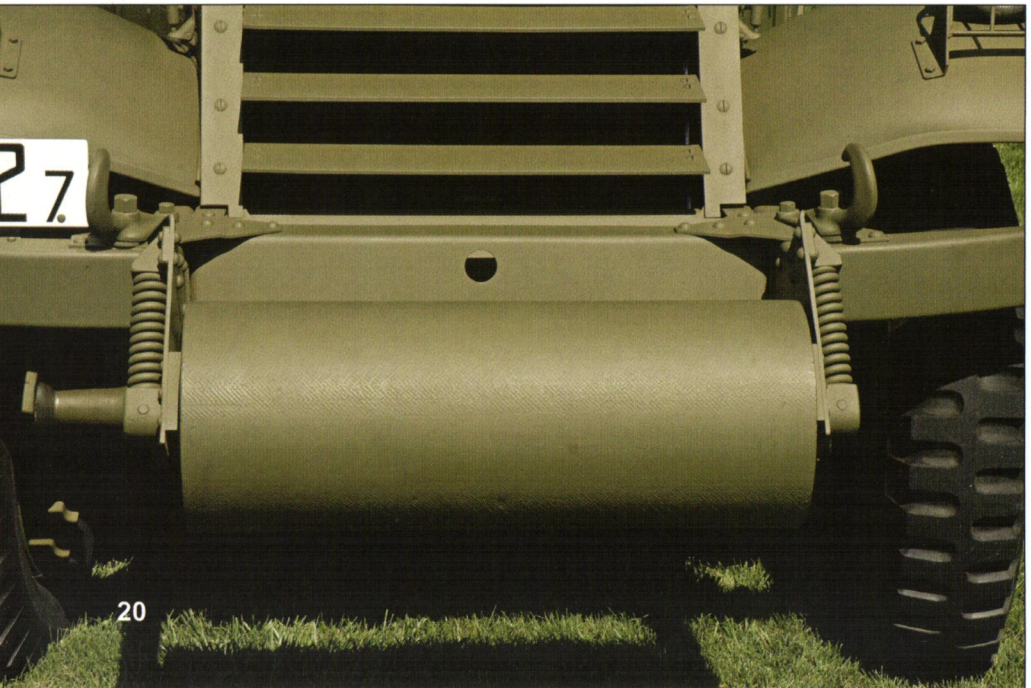


A lever inside the driver's compartment controls the radiator shutters, shown open here in this frontal view of an early-production M3A1 White scout car.

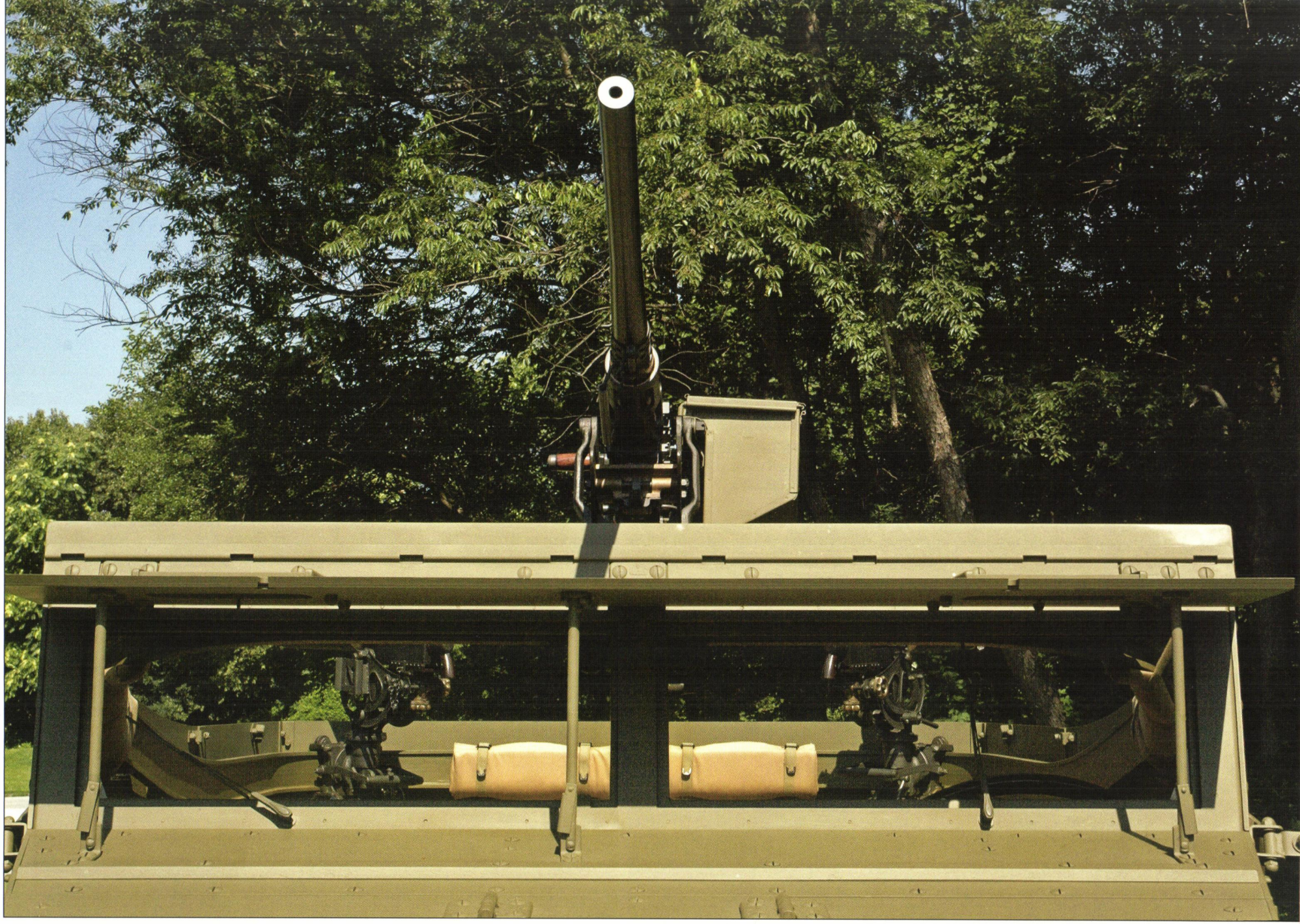
The brush guards are attached to the fender with two hex bolts on each side, as seen in this photo of the right headlight and brush guard, with the right blackout marker lamp on the outboard side of the headlight.

Fitted on the left front fender are the left headlight, blackout marker lamp, and brush guard.

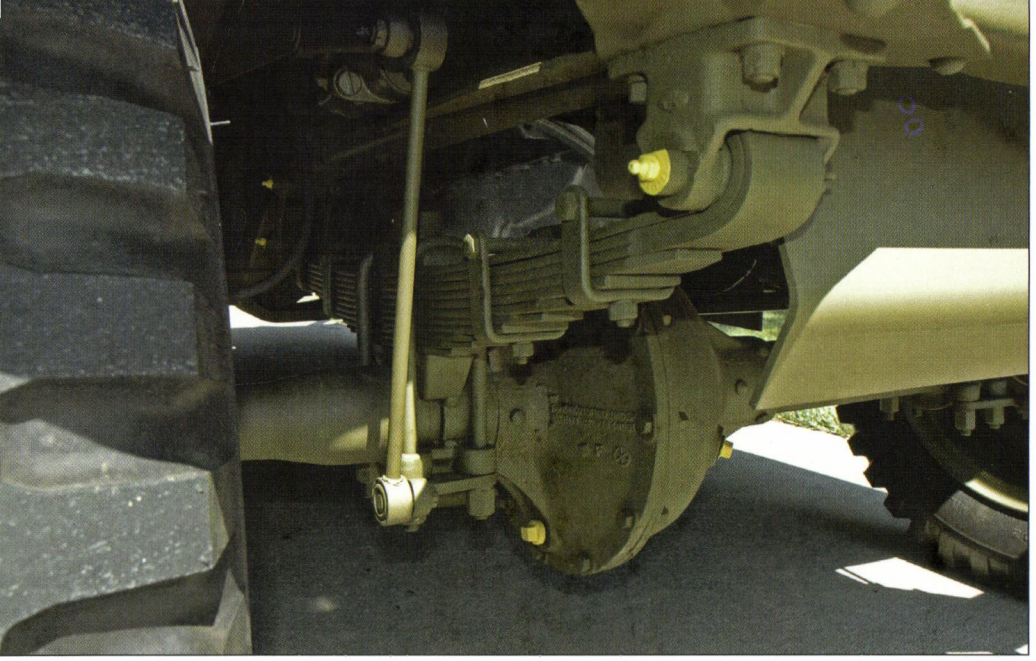
The front bumper assembly comprises a center section, behind the roller, and two bumperettes extending to either side. The center section is recessed behind the bumperettes.



Each of the four radiator shutters is hinged at the top and swings downward when closed. The shutters are made of ¼-inch armor plate, with two slotted, oval-headed screws on each side holding the hinges. When closed, the shutters provided the radiator with a modicum of protection from small-arms fire and shrapnel.



The windshield, armored shield and props, and .50-caliber machine gun mount are seen here from the front. When the armored shield was lowered, it was necessary to remove the glass panels from the windshield frame.

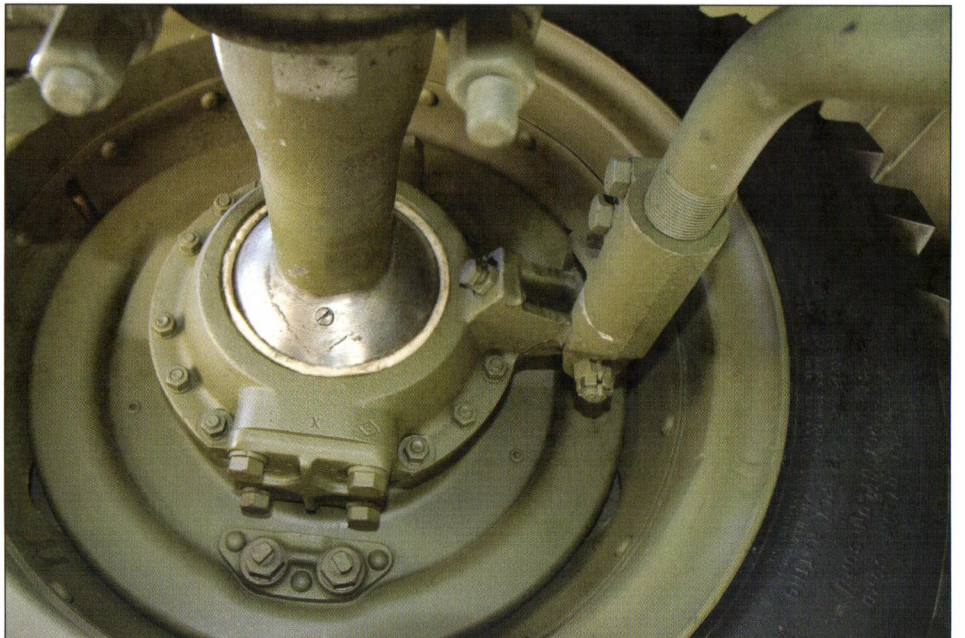


The vertical rod in this view of the right side of the axle and front differential is the shock absorber connecting link. To the right of the front spring bracket is a curved plate of 1/4-inch armor, meant to protect the underside of the engine from projectiles.

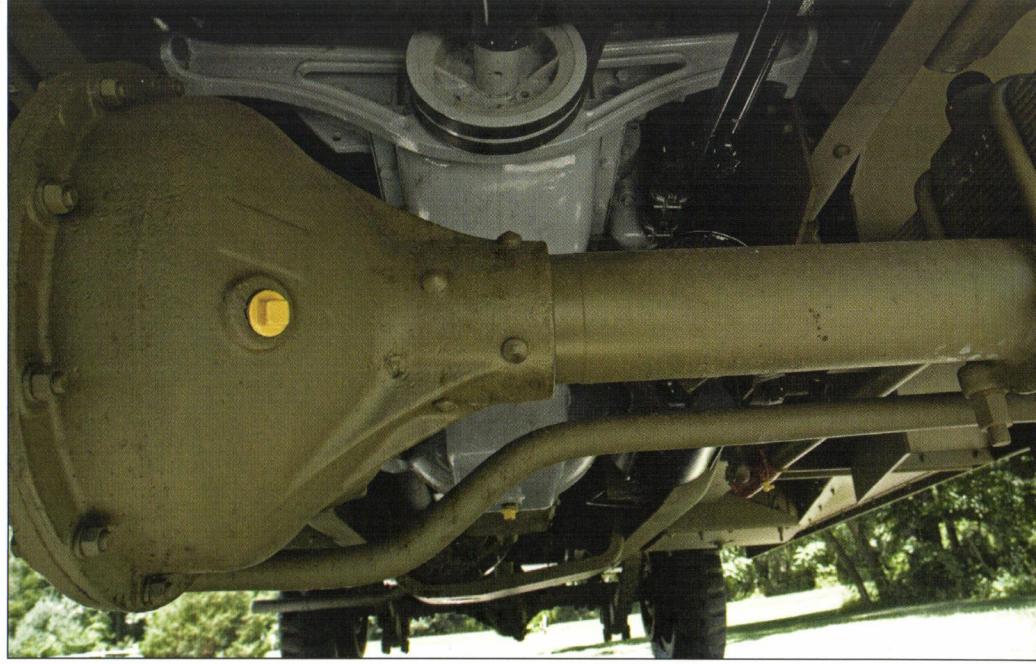
Army specifications called for the entire axle assembly to be painted flat olive drab, except for the steering knuckle ball joint, as seen here. That area was to be kept oiled. The front and rear spring assemblies for the M3A1 scout car were produced by both the Eaton Manufacturing Company as well as the main contractor for the cars, the White Manufacturing Company.

Visible in this view of the front right suspension are the inner flange of the steering knuckle, with the hydraulic brake hose above it, and, at the center of the photo, the shock absorber connecting link and the U-bolts securing the axle to the spring. Above the differential are the gray-painted front engine mount, pulley, and crankcase oil pan.

Appearing in this view from below of the inside of the front right wheel are, from the center bottom upward, the brake cover with its two anchor pins; the lower trunnion bearing cap, with four hex bolts, on the inner flange of the steering knuckle; the ball joint; and, right of center, the tie rod and yoke end.

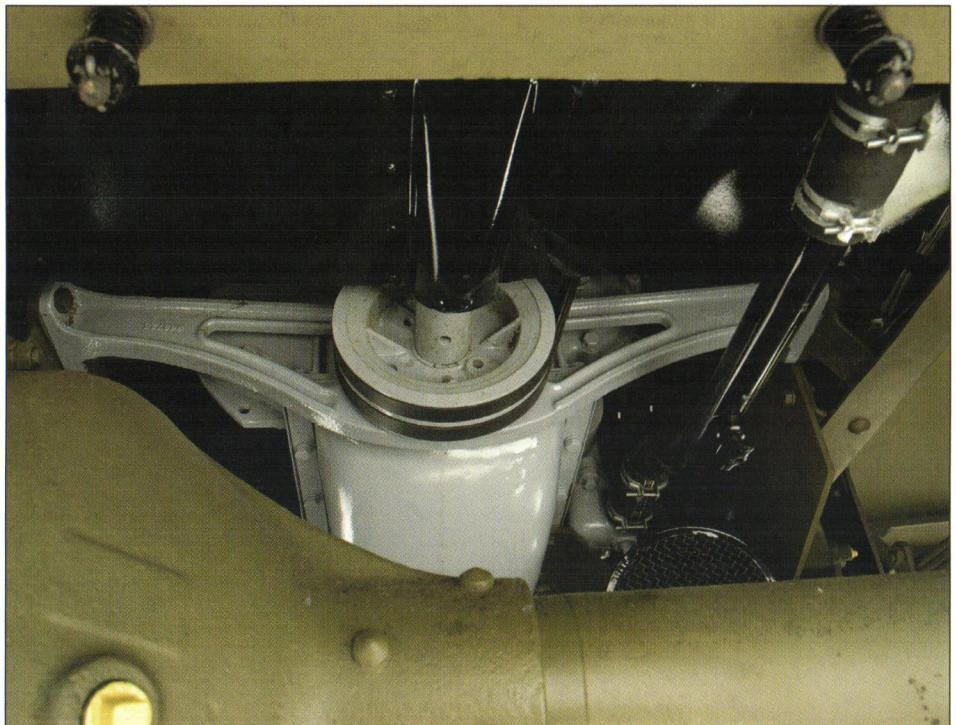


The attachment of the tie rod yoke to the steering arm of the knuckle is seen in this view of the right front wheel and tire as viewed from the rear.

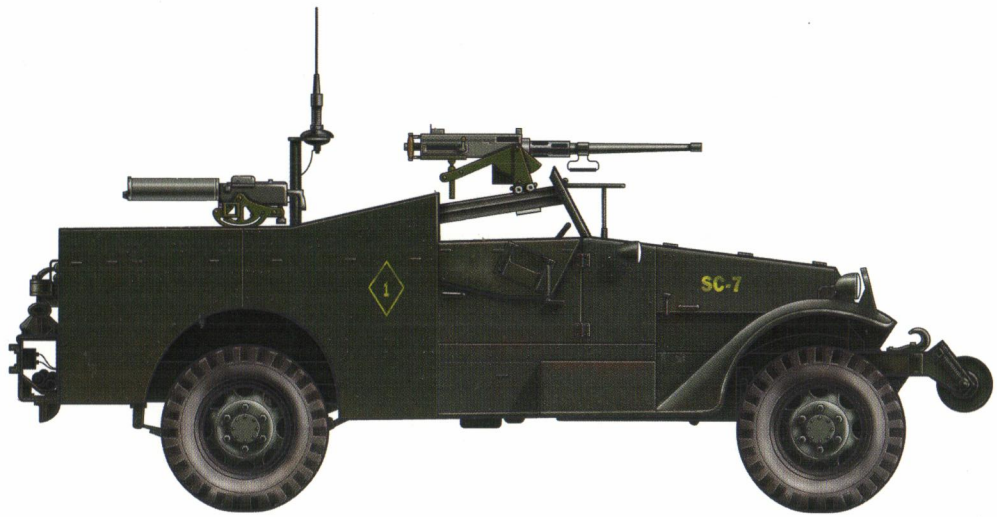


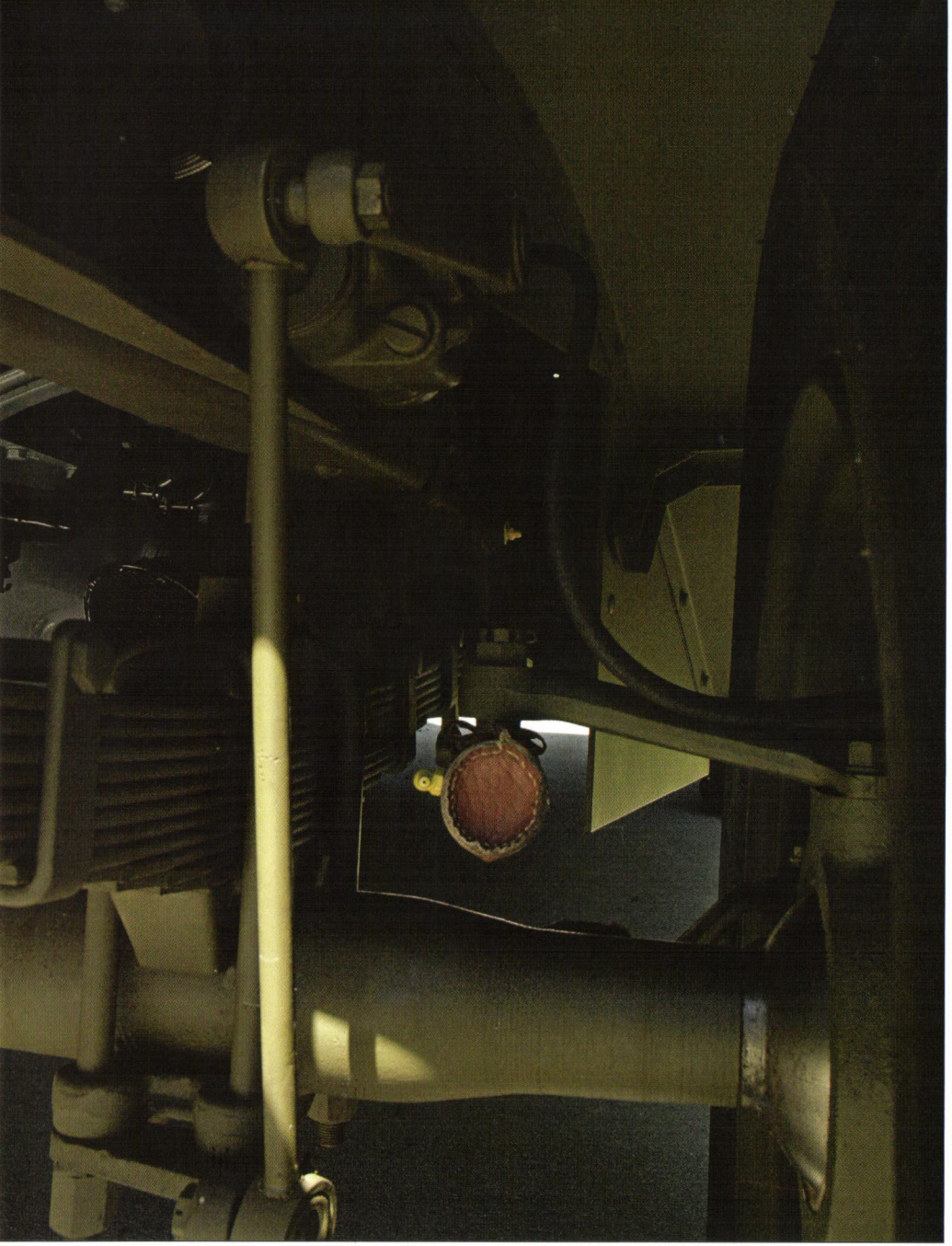
On the front of the front differential is the yellow lubricant filler cap. The gray-painted front engine mount and oil pan are also visible.

This close-up shows the pulley and fan and generator belts at the front of the engine. To the right is a radiator hose, behind which is the water pump, mounted on the left side of the engine.



An M3A1 Scout Car of the 1st Marine Division bears that division's insignia: the number 1 inside a diamond. On the hood is the USMC registration number SC-7, the letters SC being an early registration code standing for "Scout Car."

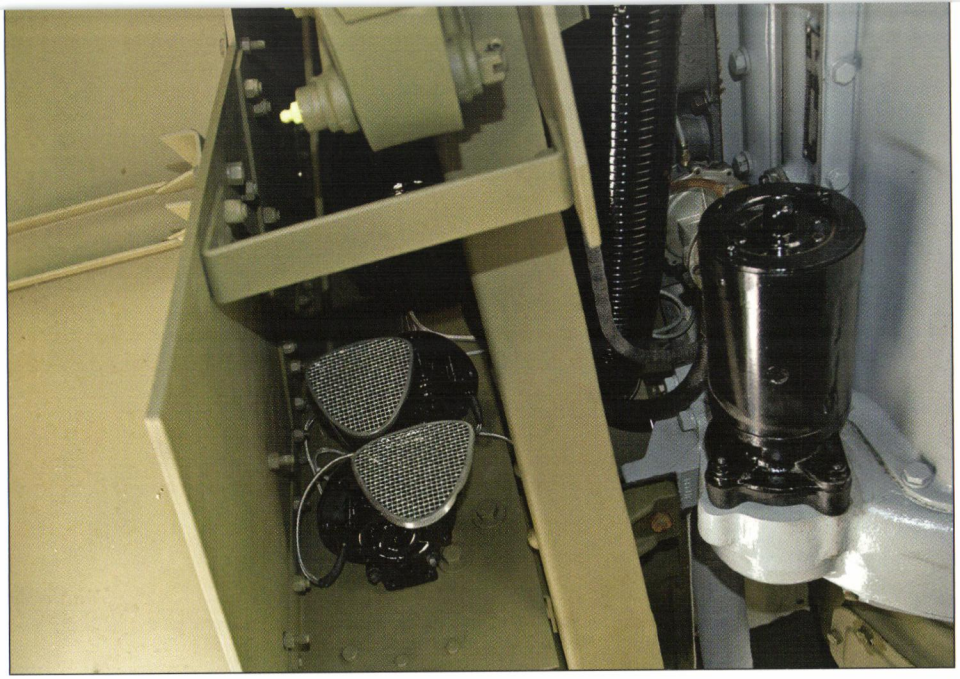




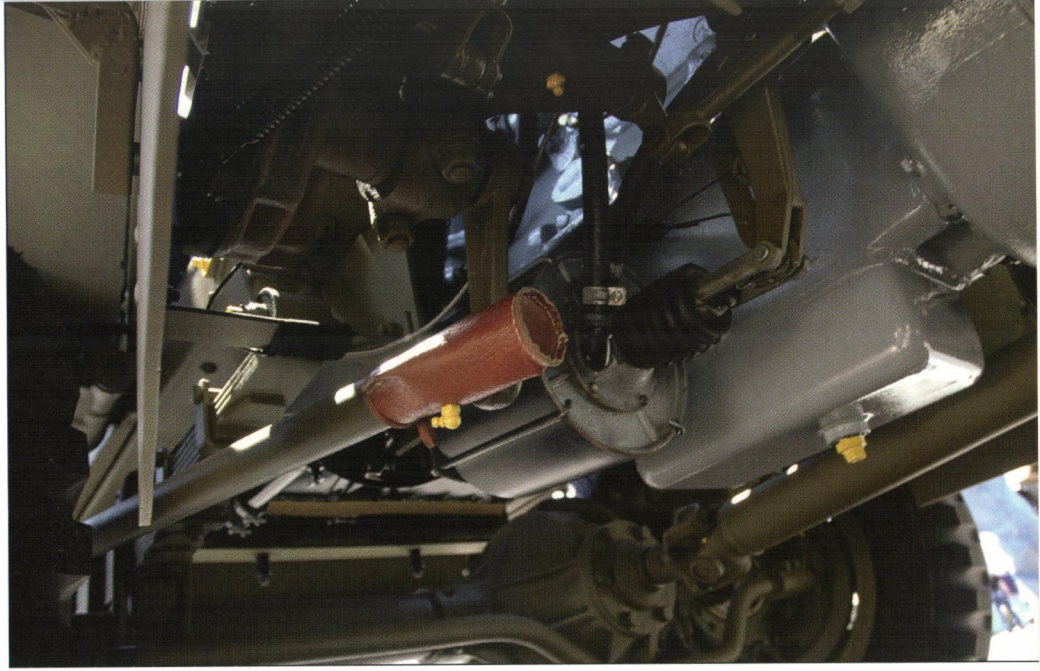
The vertical shock absorber link is attached to the left front Delco shock absorber, bolted to the frame above the spring. Attached to the underside of the steering knuckle arm is the forward end of the drag link. The drag link plug is covered and protected by a stitched leather boot.

As viewed toward the rear, the black drum between the crankcase oil pan and the drag link is the vacuum booster assembly, part of the hydraulic brake system. The tie rod crosses the view at the top.

In a view of the underside of an M3A1 from behind the right front wheel well, the black starting motor is mounted to the bell housing to the upper right. Toward the rear of the starting motor, the exhaust pipe passes over the transfer case, below which is the transfer case protector channel.



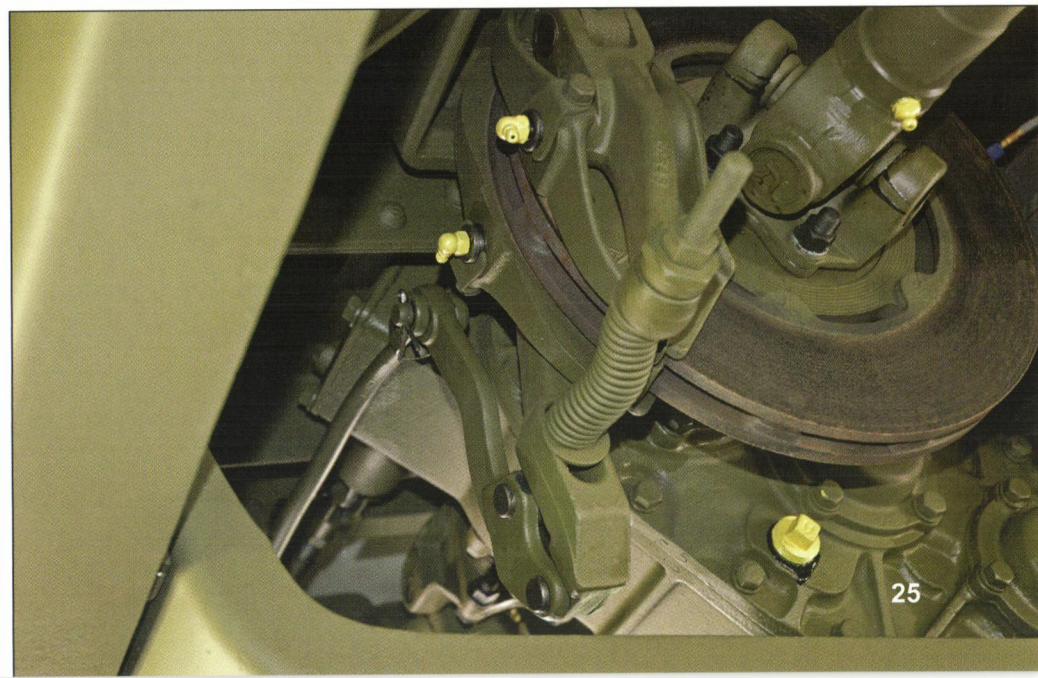
The horn, a dual-type, high-and-low-note vibrator design, is located in a cavity outboard on the right side of the frame next to the engine. Bright metal screens are fitted over both trumpets. Also visible in the picture are the starting motor, to the right, and the spring shackle, to the top center.

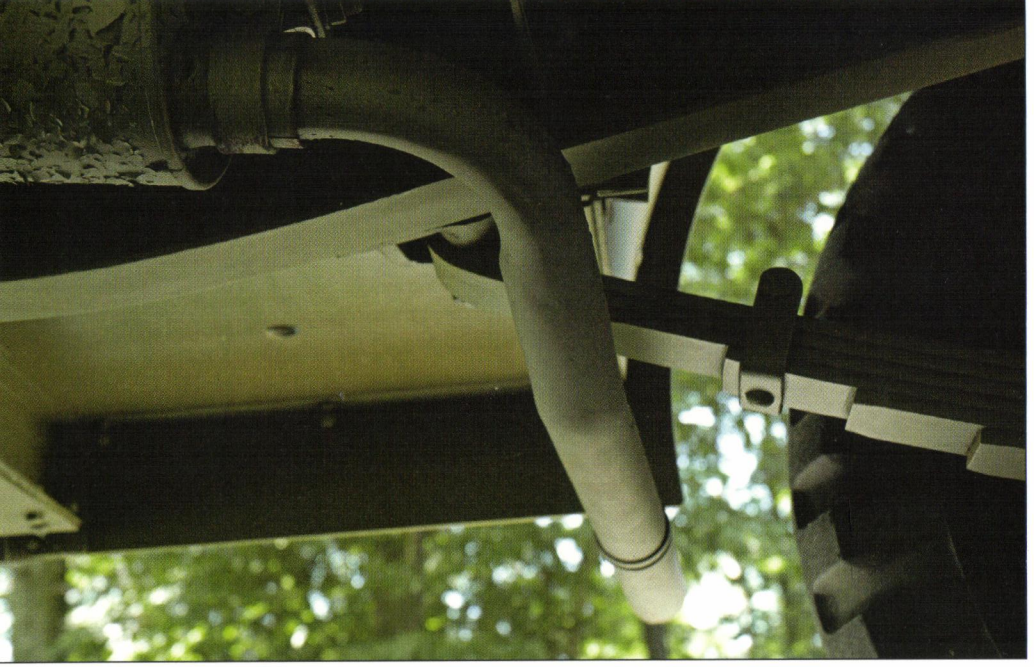


The underside of the chassis is viewed here diagonally forward from the rear of the front right tire. A stitched russet leather boot fits over the rear end of the drag link, to protect the plug at the end of the link. Connected to the drag link is the steering arm, the upper end of which is connected to the steering gear.

In this view of the transfer case from the rear, the rear drive shaft (or propeller) is linked to the disk of the drive shaft brake; to the left of the shaft are the two brake shoes, operated by the hand brake lever in the driver's compartment. To the right is the muffler.

In this close-up of the drive shaft brake assembly, the pull rod from the hand brake is toward the left and is attached to the top of the brake lever arm. There are yellow lubrication plugs and fittings on the drive shaft, brake shoe pivots, and transfer case.



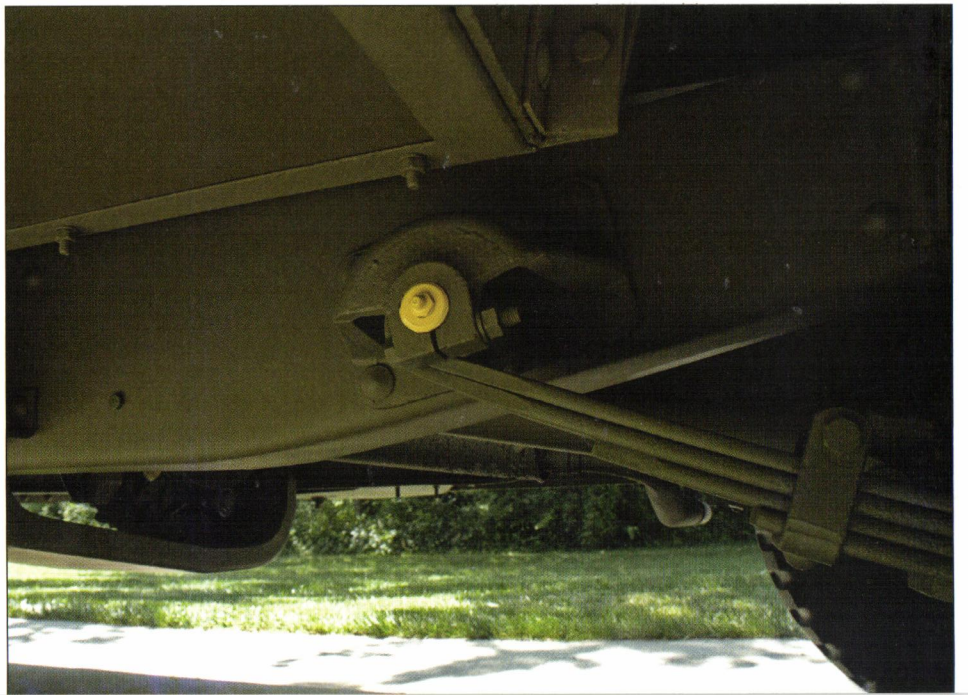


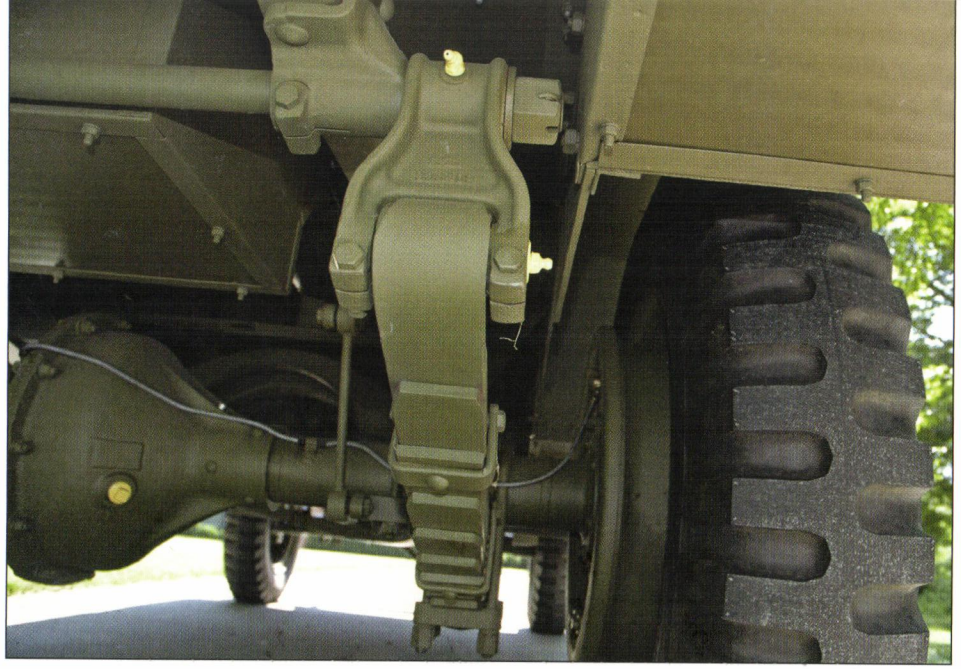
The rear of the muffler and the tail pipe are seen here, with the front of the right rear tire to the right. On very early M3A1 scout cars the exhaust outlet was at the right rear of the vehicle, rather than in front of the right rear wheel well, as in this instance.

Rear drive train elements in this photo are, left to right, the drive shaft (propeller), flange and pinion gear assembly, and differential. The rear and front axles both have a split-type differential housing that is bolted together.

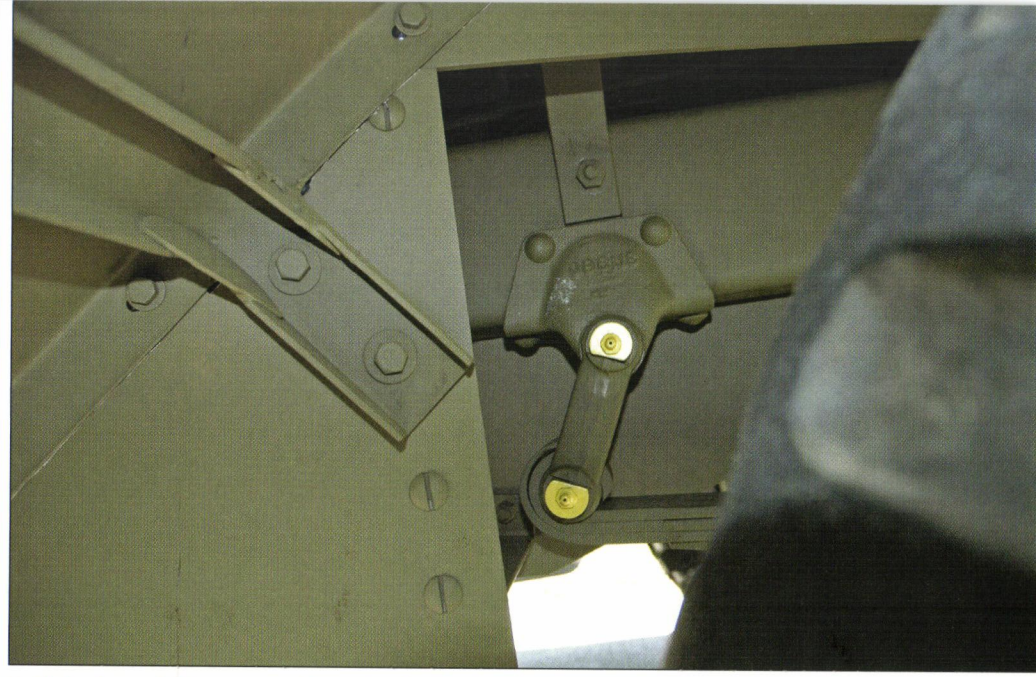
The bottom of the frame crossmember is seen above the rear axle, with part of the floor of the vehicle above it. On the top of the crossmember, above the round cutout, is the mounting bracket for the radio mast.

The forward spring mount of the left rear suspension appears here with the transfer case protector channel to the lower left. Grease fittings on the early vehicles were painted yellow, whereas later the standard became red.



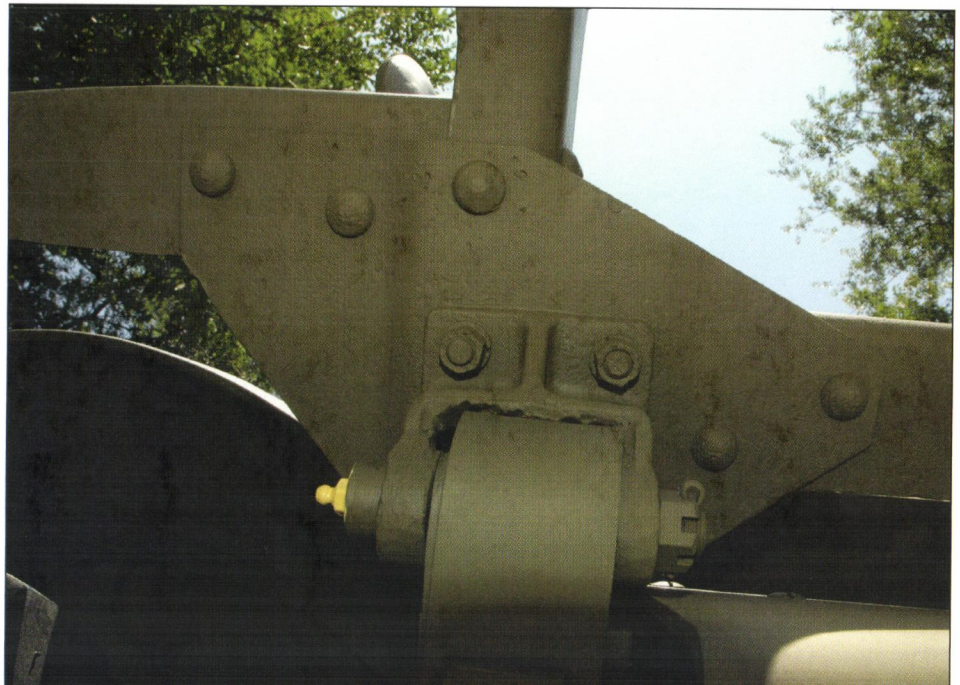


The spring shackle of the right rear suspension is detailed here. To the upper left is the underside of a foot well in the floor of the rear compartment, to accommodate the feet of the men seated there.



In this view of the rear spring shackle of the right front suspension, the tire is to the right. To the left is the rear support of the fender. The support and the flange on the inner edge of the fender are bolted to the body.

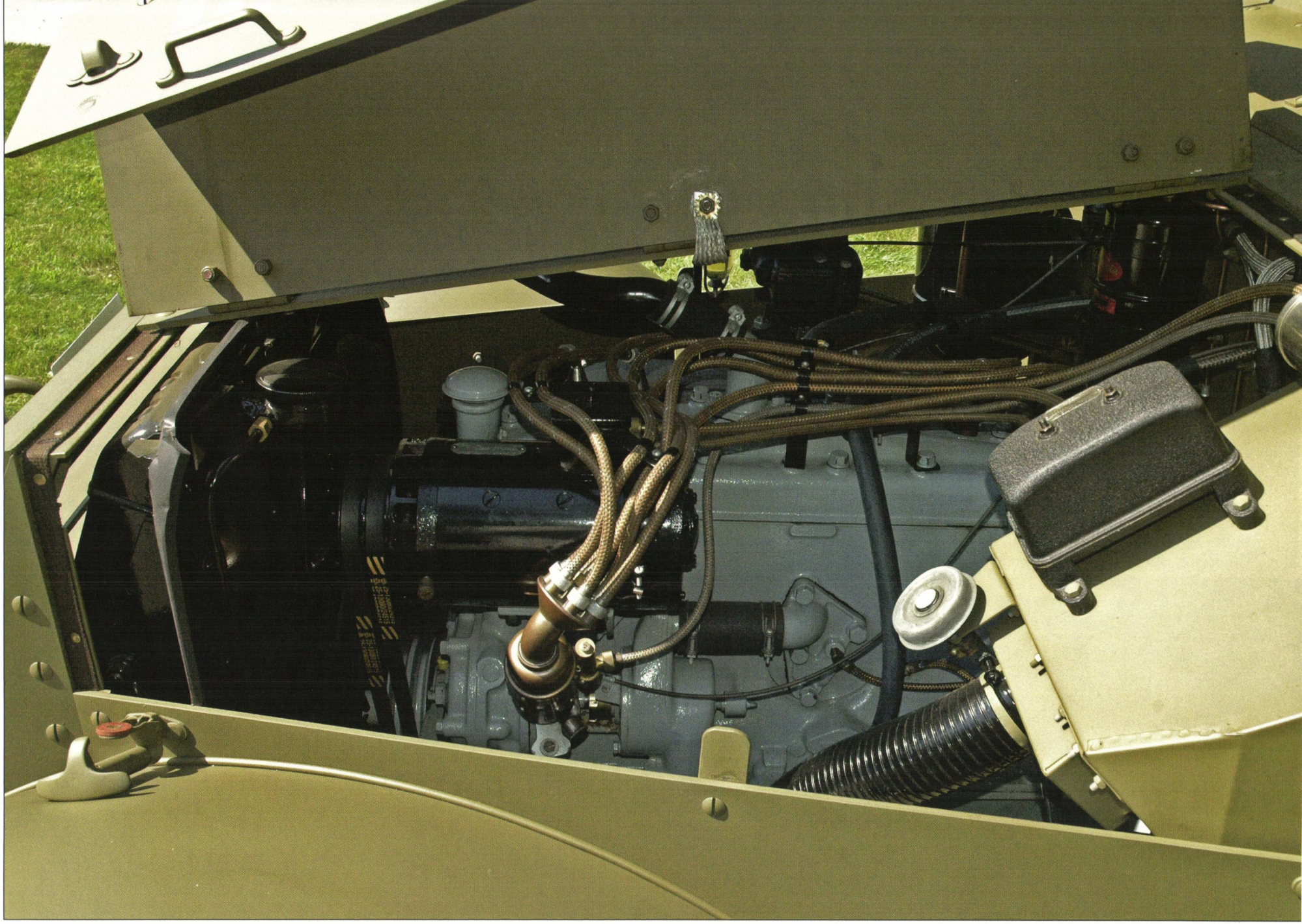
This view from below of the front end of the right front spring illustrates the design of the flange of the spring bracket. It is attached to the lower gusset at the frame-fender joint. (The roller is out of the view to the upper right.)



Engine Data

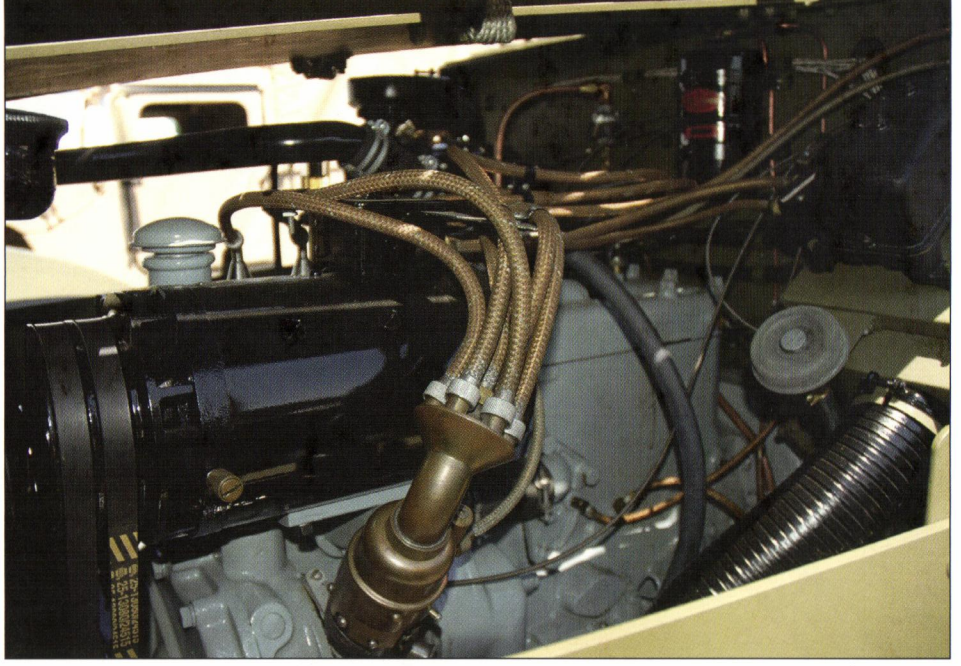
ENGINE MAKE/MODEL	Hercules JXD
NUMBER OF CYLINDERS	6 cylinders
CUBIC INCH DISPLACEMENT	320 cubic inches
HORSEPOWER	110 @ 2,800 rpm
TORQUE	200 @ 1,150 rpm
GOVERNED SPEED (rpm)	2,800 rpm
ENGINE TYPE	4-cycle, L-head
BORE	4 inches
STROKE	4 ¼ inches
COMPRESSION RATIO	5.88:1
CRANKCASE CAPACITY	6 quarts
BRAKE HORSEPOWER	110 at 3,000 rpm

The hood has two movable assemblies, right and left, while the center panel is bolted in place. The shiny metal cylinder visible in the engine compartment is the ignition coil and shield. On the opposite side of the engine compartment is the black air cleaner and air-intake hose.



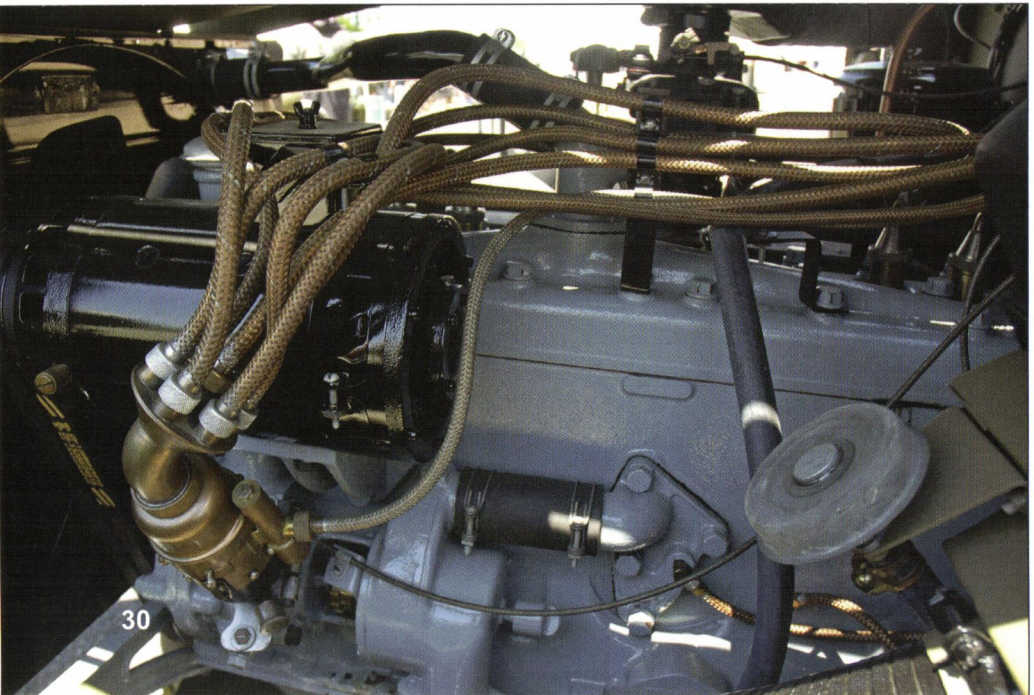
The Hercules six-cylinder inline engine provides power to the M3A1. Visible components on the engine include, left to right, the generator, distributor and ignition wires, and, immediately to the right of the distributor, the water pump assembly. The voltage regulator is the matte black box to the right.

As seen from the front of the vehicle with the hood open, the bright metal cylinder is the ignition coil and shield assembly, with the voltage regulator in front of it. The cylindrical ignition coil and shield assembly is a characteristic of earlier-production M3A1s.

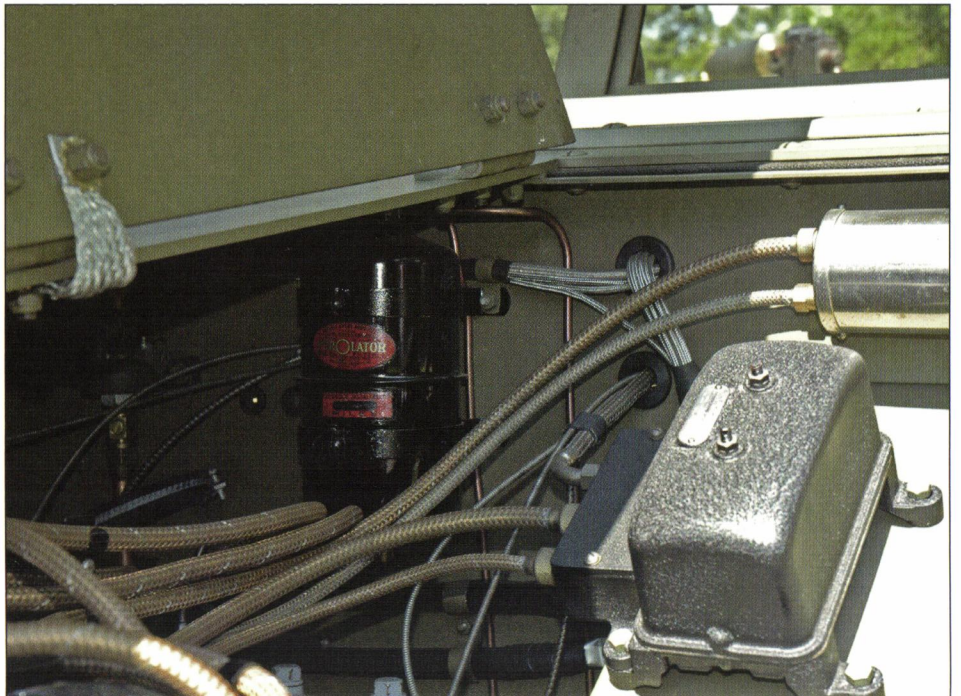


The flex hose to the lower left is a ventilator tube for the driver's compartment. The gray "cap" above it is the vacuum booster air cleaner.

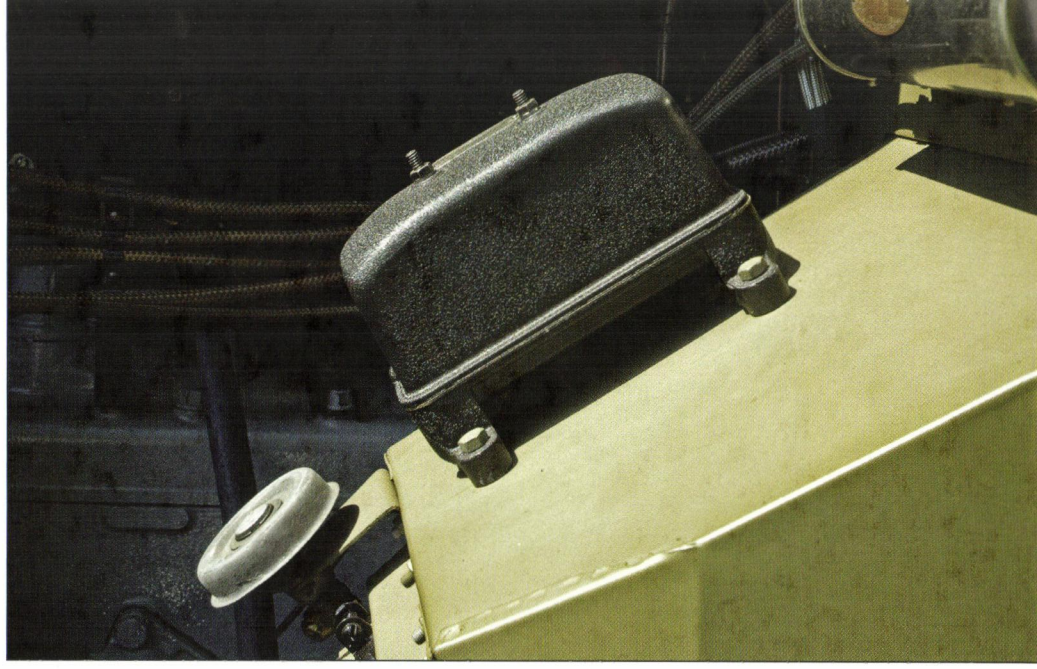
Two types of distributor were used on the M3A1 scout car. This unit with a brass finish is the early type. The later model was radio shielded and had a cap and removable cylindrical shield. Braided tan ignition cables are visible.



As viewed from the left side of the engine compartment, left of center, on the firewall, is the Purolator oil filter, and to the right are the voltage regulator (with a textured finish on the cover) and ignition coil and shield assembly. The white braided material attached to the hood to the left is part of the vehicle's radio-suppression equipment.

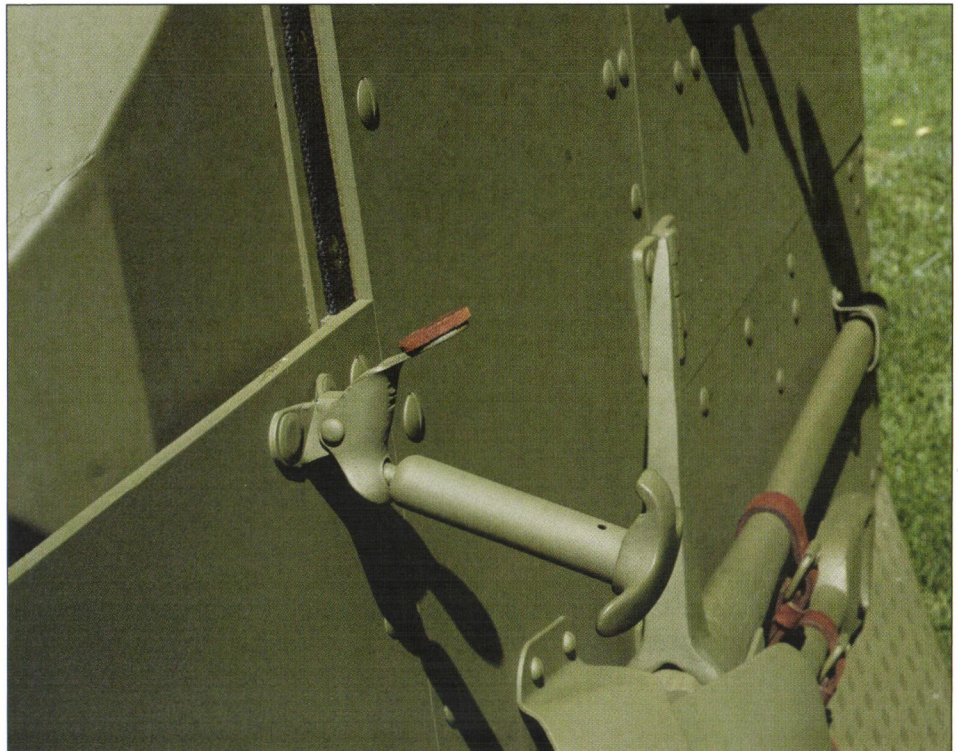


The ignition coil and shield assembly are seen close up. The brass data plate on the cover identifies it as a "Shielded Ignition Manifold / Made in the U.S.A."

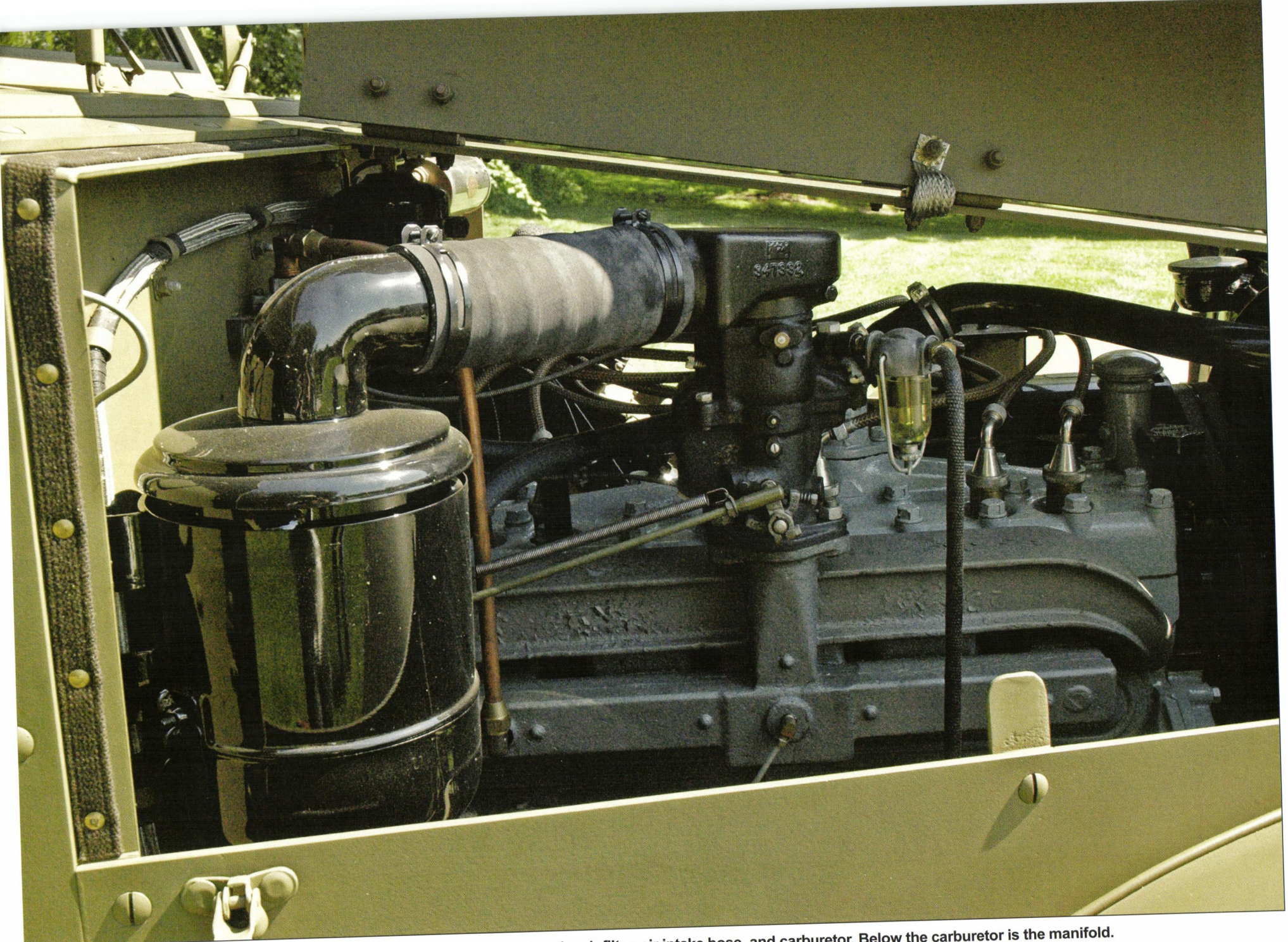


A side view from the left outside of the engine compartment of (left to right) the vacuum booster air cleaner, voltage regulator, and ignition coil and shield.

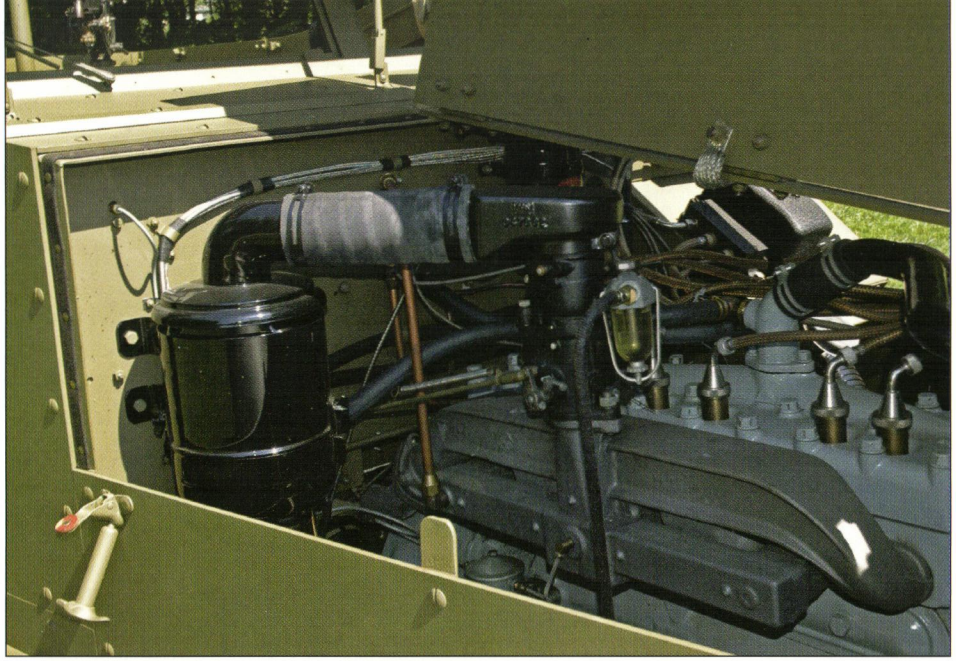
The rear corner of the left side of the engine compartment, with the hood open. Hanging on the body just below the corner is the rear hood clamp.



The hood, seen from the front of the vehicle, is open on the right side of the engine compartment, showing the air cleaner and air intake hose.

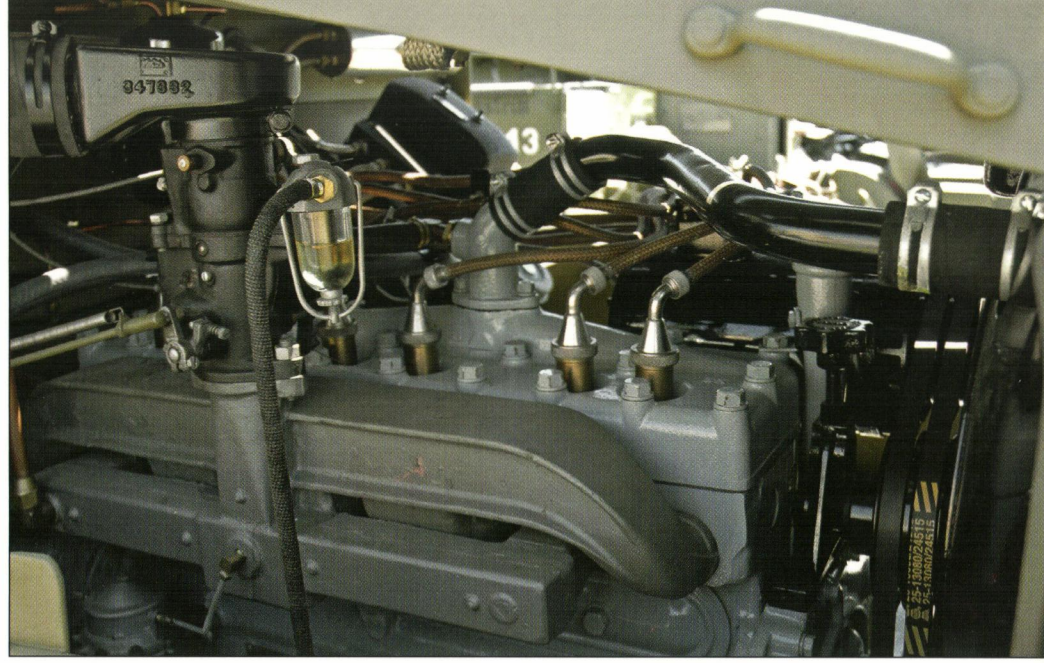


This side view of the right side of the engine compartment highlights the air filter, air intake hose, and carburetor. Below the carburetor is the manifold.



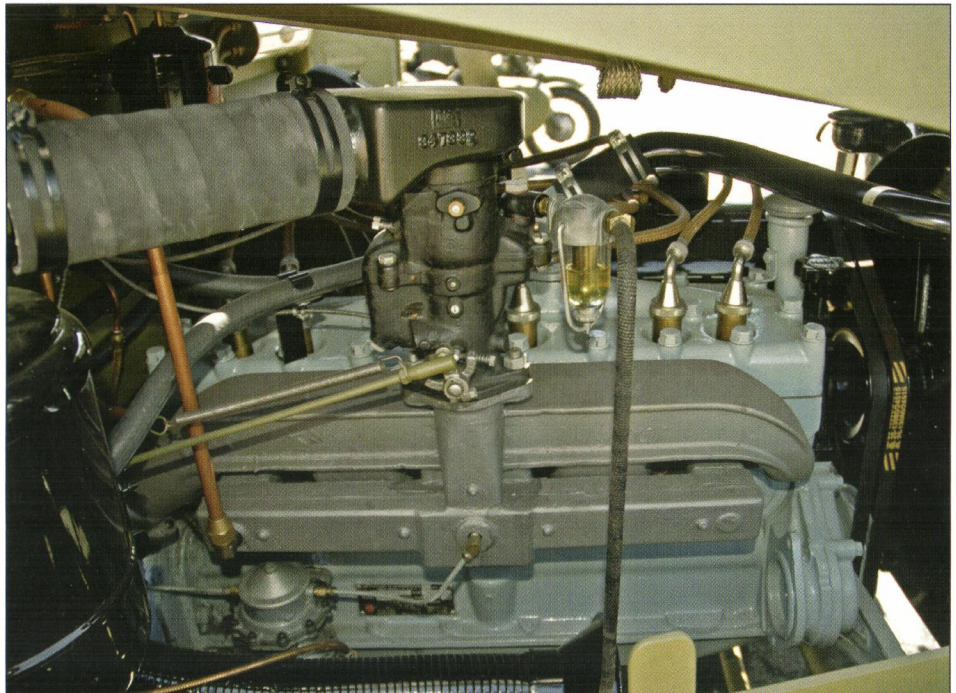
The fuel filter with a glass bowl is on the forward side of the carburetor. Later-production M3A1s had a metal bowl for the filter, to reduce breakage. The spark plugs on the cylinder head have conical shields.

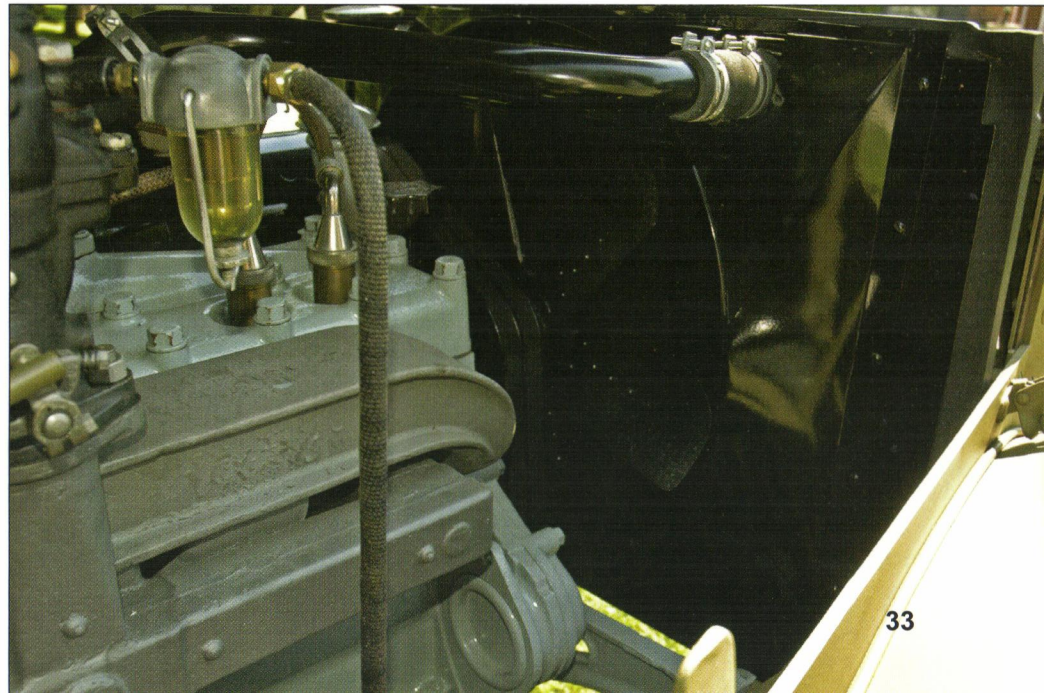
To the lower rear side of the engine is the fuel and vacuum pump assembly. The vacuum line tube runs from the vacuum pump to the manifold. Also visible routed to the carburetor are the accelerator control rod and the choke control cable.

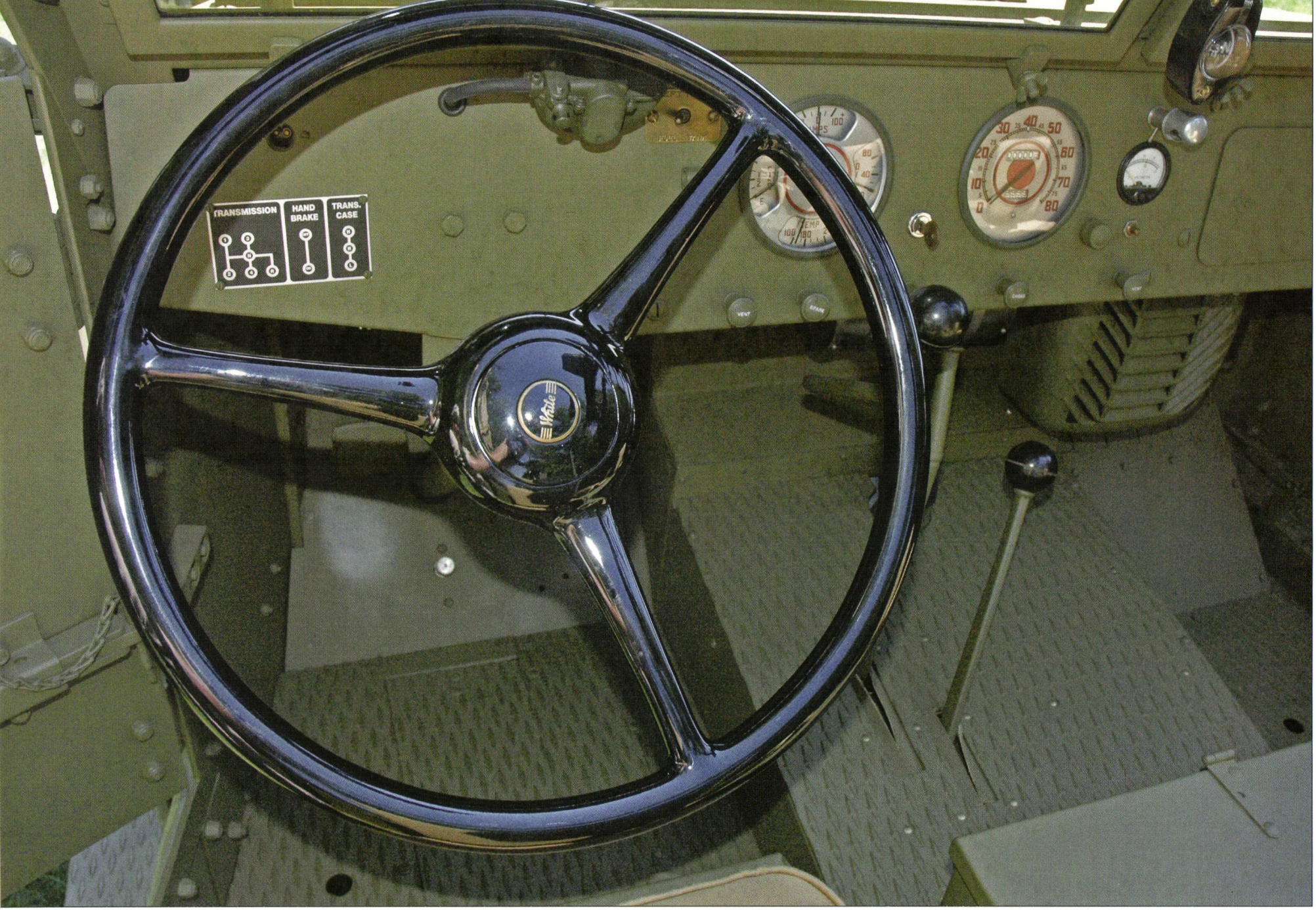


The right side of the Hercules six-cylinder engine is seen close up. There is a part number stamped on the air intake above the carburetor (upper left). The black knob immediately to the rear of the dual fan belts is the fan belt adjusting screw; just beyond it is the oil filler tube.

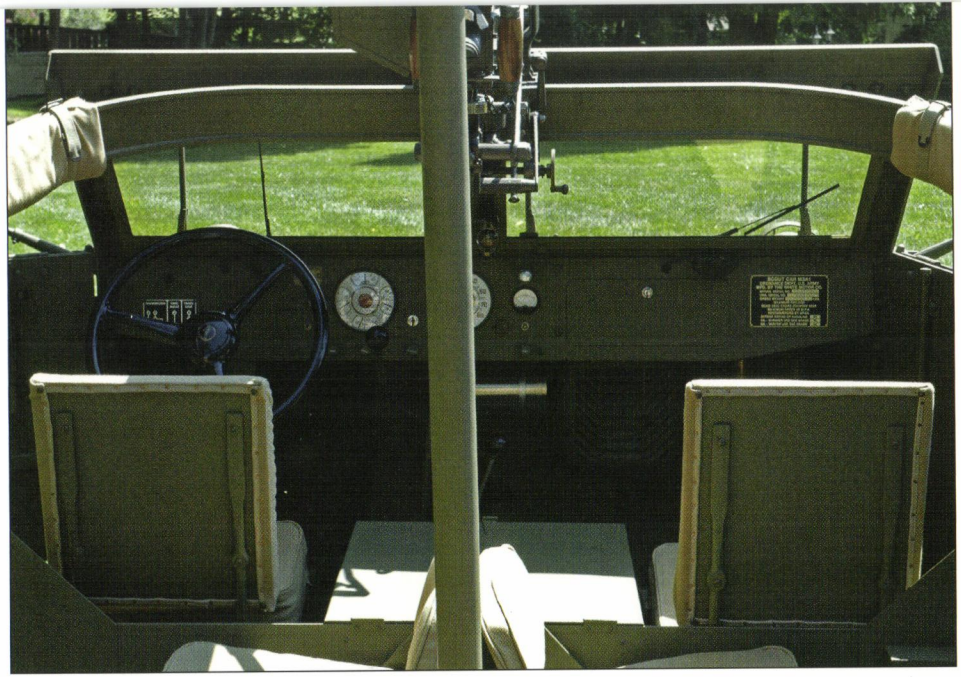
The radiator shroud and radiator line are to the right in this close-up of the fuel filter and fuel line. To the lower front of the engine is the engine mount.







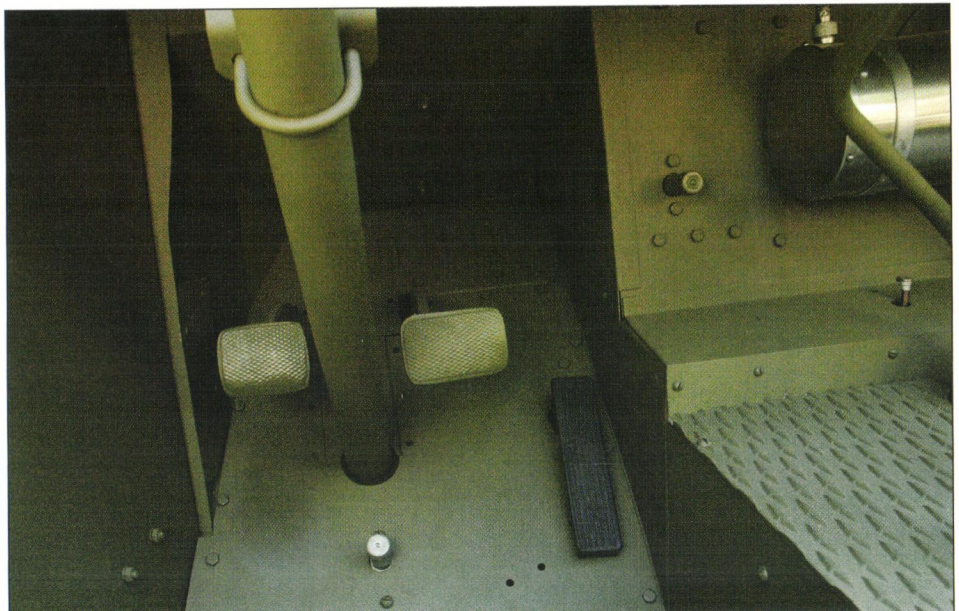
The horn button is on the hub of the steering wheel, as seen in this image of the driver's compartment and dashboard. A plate giving the patterns for the operation of the transmission shift, hand brake, and transfer case shift is to the front of the wheel. Below the top of the wheel, on the dashboard, is the left vacuum-powered windshield wiper driver.



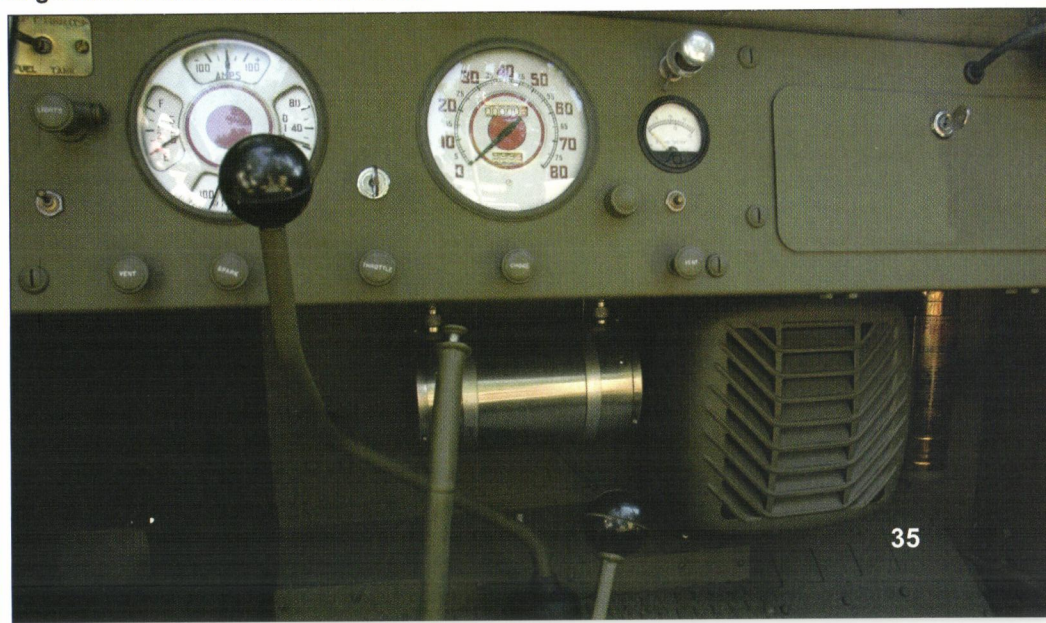
In the center of this view of the driver's compartment, seen from the rear compartment, is the antenna mast. Forward of the mast is the .50-caliber machine gun centered on the forward portion of the skate rail. At either side crash pads are wrapped around the rail, which would have been removed to permit shifting the carriage to the rear of the car.

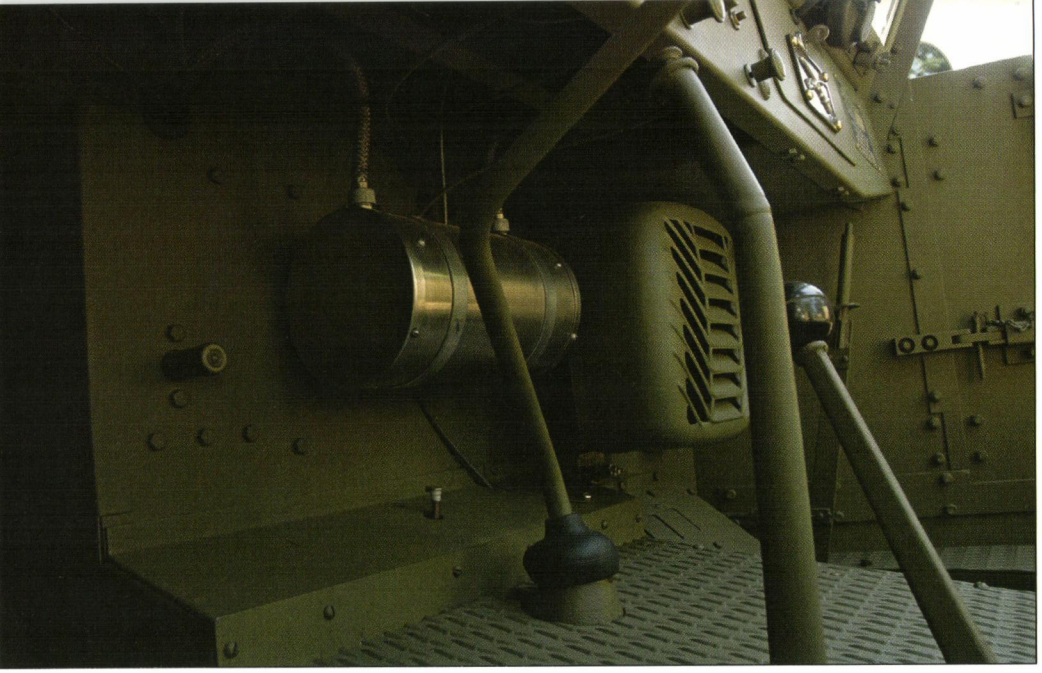
Partially hidden by the steering wheel is the instrument cluster, containing an ammeter, fuel gauge, oil pressure gauge, and water temperature gauge. The large gauge to the right is the speedometer, to the right of which is the voltmeter. A compass is mounted to the center pillar of the windshield.

Flanking the steering column are the clutch (left) and brake pedals, with the accelerator pedal to the right. The foot dimmer switch is below the steering column, and the foot ignition starter switch is above and to the right of the accelerator pedal. A U-bolt secures the steering column to a bracket on the bottom of the dashboard. To the upper right is the radio filter. Diamond-tread plate was used for the flooring.

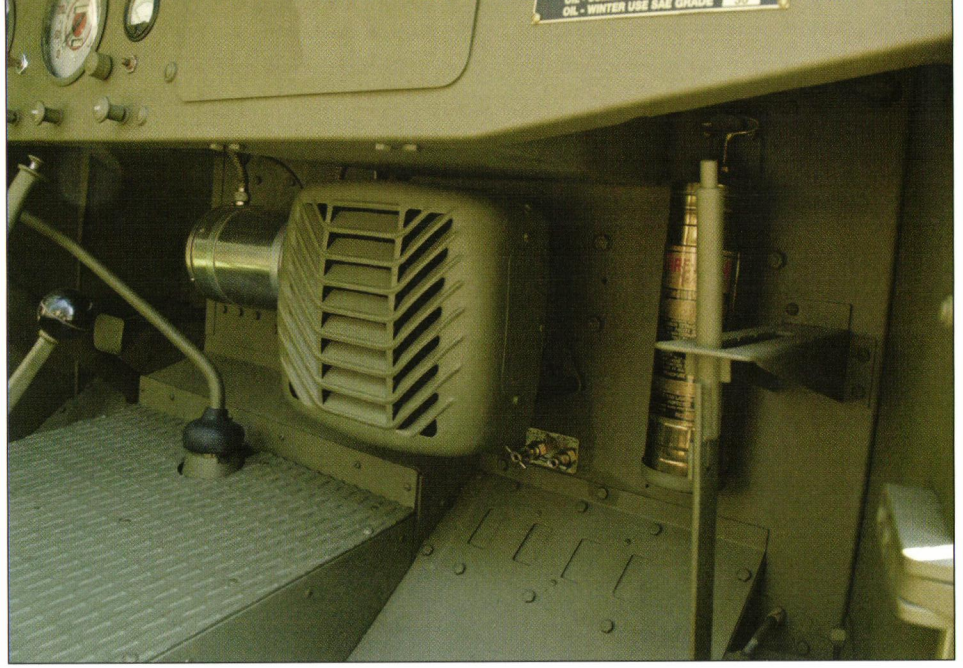


The transmission shift lever is to the left, hand brake in the center, and transfer case shift lever to the right. The olive drab buttons along the bottom of the dashboard are, left to right, left ventilator control, spark control, throttle control, choke, and right ventilator control. At the top left corner of the photo is the fuel transfer valve for switching the flow of gasoline between the two fuel tanks.





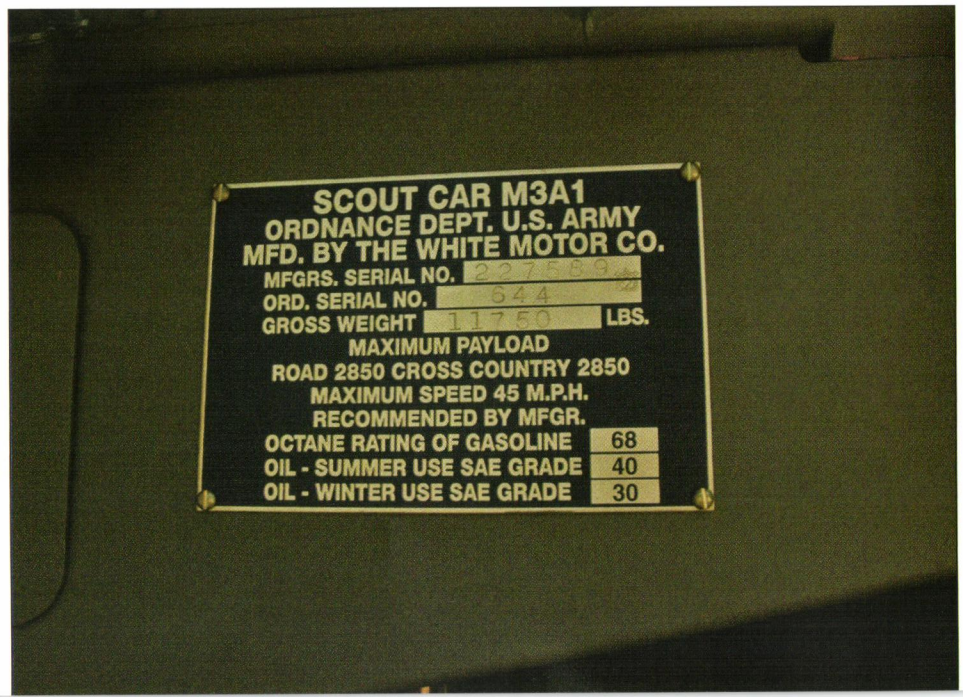
The shiny brass cylinder under the dashboard is the radio filter, which is wired into the electrical system of the vehicle and acts to reduce interference in the radio sets. To the right of it is a hot-water heater, found on early-production M3A1s.



To the right of the heater is the lever for opening or shutting the armored radiator shutter. The lever is retained by a slotted bracket attached to the front panel. To the rear of the lever is a fire extinguisher.

The fire extinguisher, a Fire Gun tetrachloride model manufactured by American LaFrance Foamite Corporation, is seen close up. The cylinder of the fire extinguisher is shiny brass. Above the heater is the bottom of the map compartment.

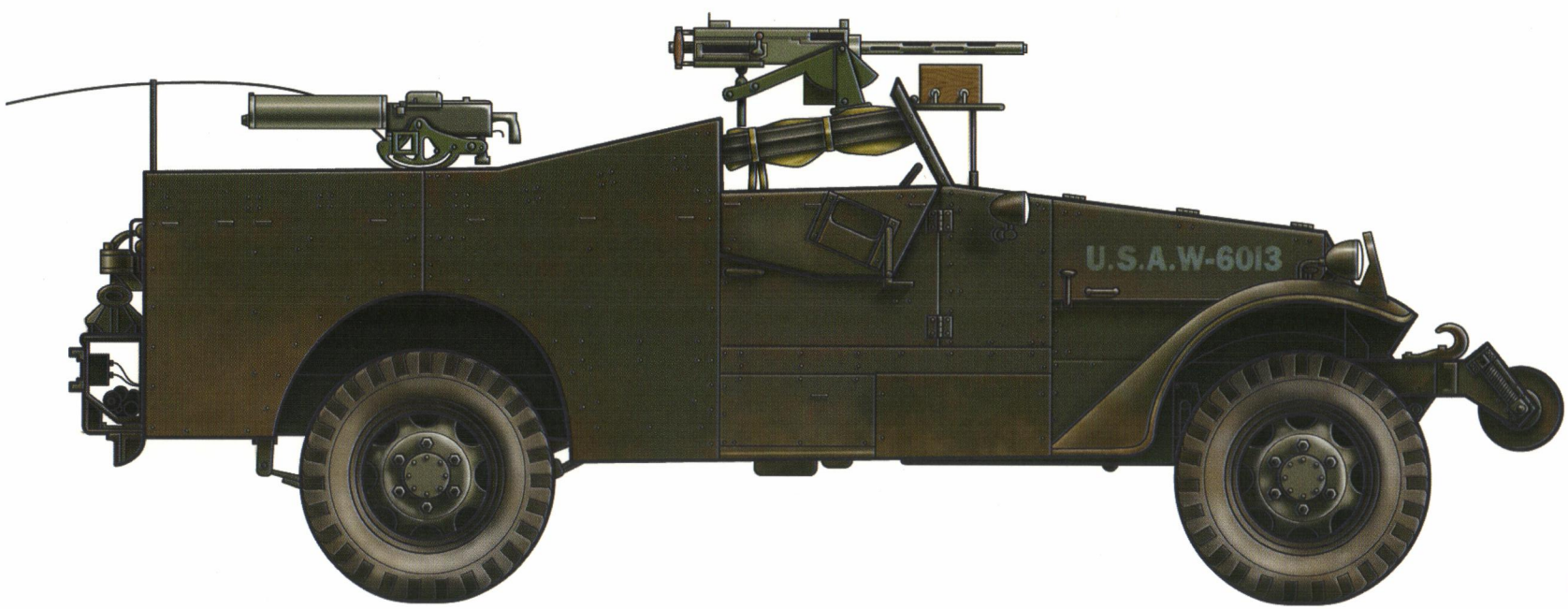
The nomenclature and cautions plate of the M3A1 is attached to the dashboard to the right of the map compartment. This one identifies the vehicle manufacturer's serial number as 2275890 and the ordnance serial number as 644.


SCOUT CAR M3A1
ORDNANCE DEPT. U.S. ARMY
MFD. BY THE WHITE MOTOR CO.
MFGRS. SERIAL NO. 2275890
ORD. SERIAL NO. 644
GROSS WEIGHT 11750 LBS.
MAXIMUM PAYLOAD
ROAD 2850 CROSS COUNTRY 2850
MAXIMUM SPEED 45 M.P.H.
RECOMMENDED BY MFGR.
OCTANE RATING OF GASOLINE 68
OIL - SUMMER USE SAE GRADE 40
OIL - WINTER USE SAE GRADE 30

The compass attached to the center pillar of the windshield is seen from the side. Not all M3A1s were equipped with a compass in this location. Clamps with thumbscrews act as retainers for the two windshield panels. The thumbscrew clamps facilitated the rapid removal of the glass panels to allow the armored windshield to be lowered.

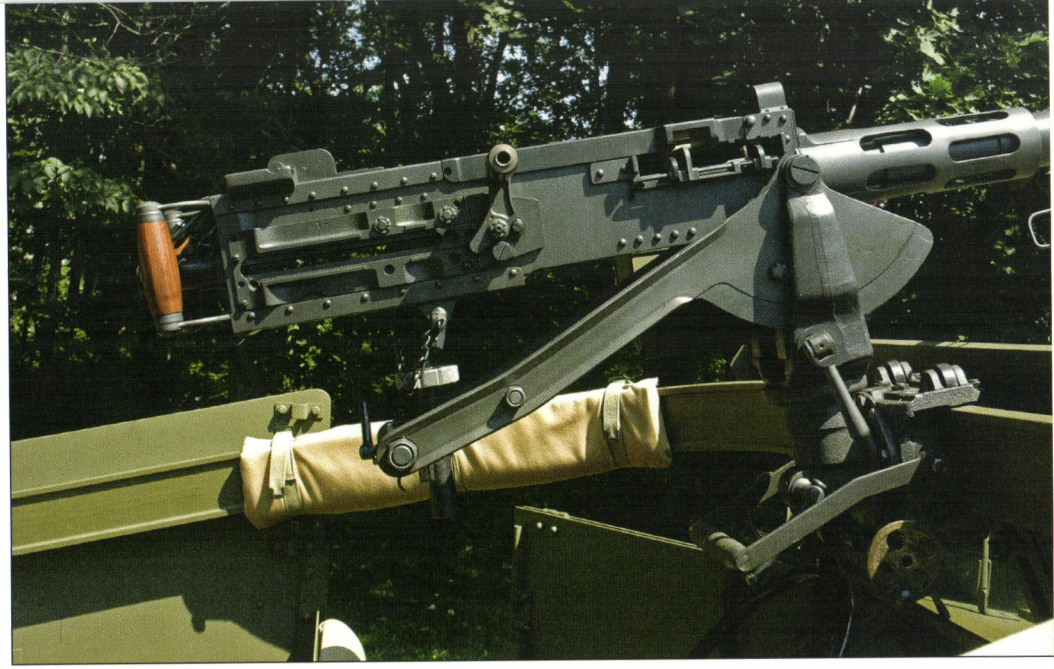
The right windshield wiper motor is below the center of the right windshield panel. At top left is the M30 carriage for the .50-caliber machine gun. The wheel with four round holes is the canting handwheel, which allows the gun cradle and pintle to be adjusted plumb, compensating for the tilted machine gun track.

A right-side view of an M3A1 shows the M2HB .50-caliber machine gun and the M1917A1 .30-caliber machine gun installed on the skate rail. A crash pad is strapped to the skate rail over the side door, and a small box rests on the raised windshield guard.



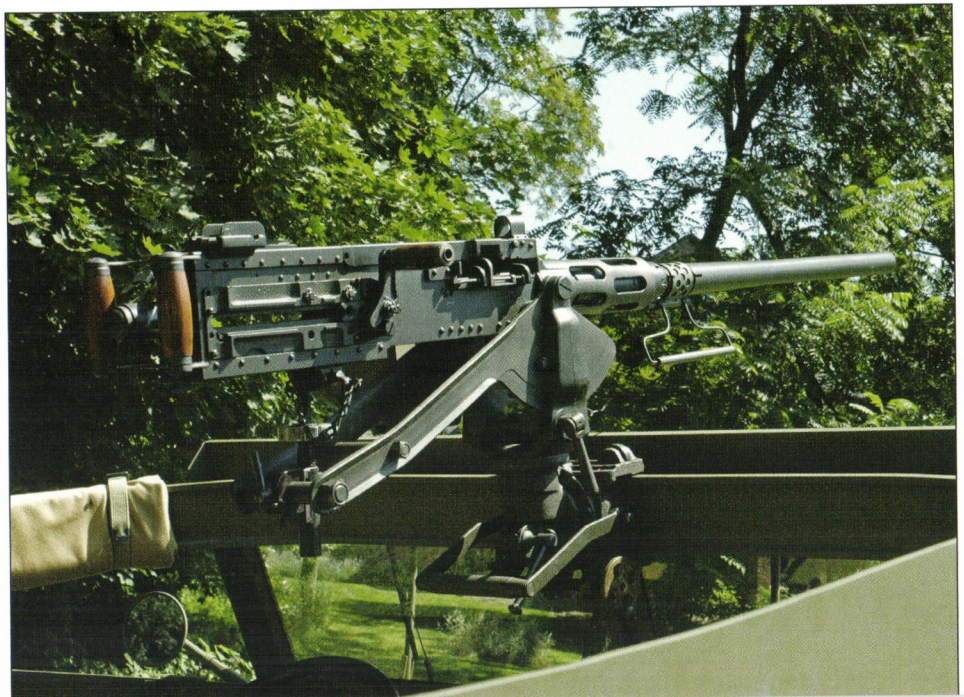
The D36960 cradle-and-pintle assembly, mounted on an M30 carriage (also called trolley or rolling mount), was designed to accommodate either a .30-caliber machine gun or, in this case, an M2HB .50-caliber machine gun. An elevating mechanism is attached to the two arms extending from the rear of the cradle. The lever at the bottom of the cradle locks the elevation function of the cradle in place when not in use.

The track clamp handle, just above the crash pad on the machine gun track in this photo, locks the rolling carriage in place on the track. To the top left of the photo is the charging handle of the gun.



To the front of the rolling carriage, the two top rollers are visible. The carriage also has six horizontally-oriented outer rollers: two that roll against the upper edge of the outside of the track, and four at the bottom, on both sides of the track.

The handle on the barrel aids in removing the hot barrel when it is necessary to insert a fresh one. The wooden grips and charging handle have a natural finish, although they were painted black on some M2 machine guns.



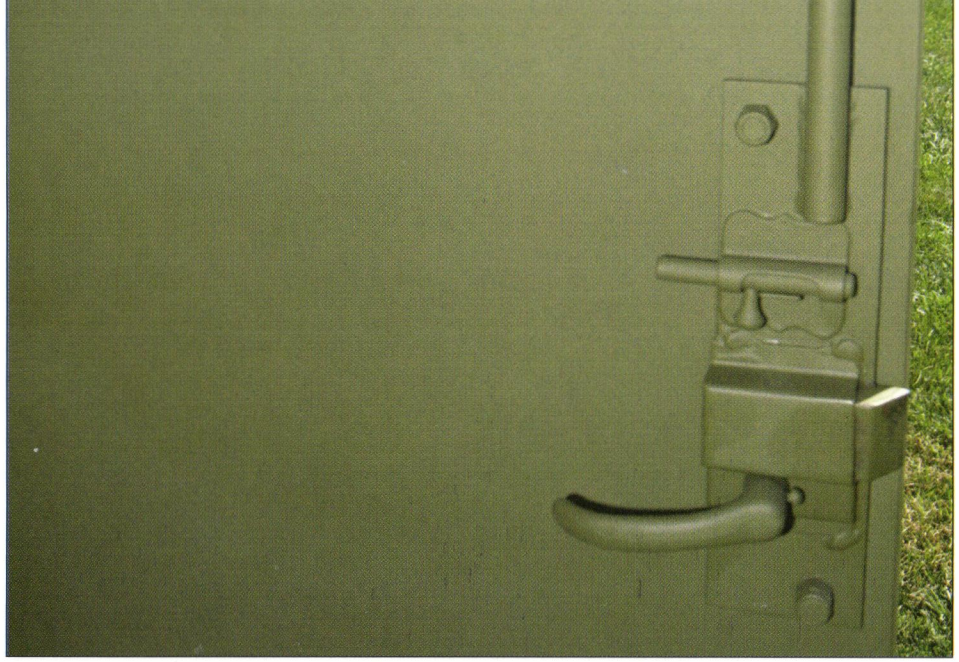
The butterfly-type trigger is between the upper ends of the grips. Toward the top of the rear of the receiver is the rear sight. Attached to the rear of the cradle is the elevating mechanism, which allowed the gunner to set the weapon at a fixed elevation.

The two front seats have canvas-covered bottom and back cushions and are mounted on tracks, allowing adjustment forward or backward. Below each front seat is a 15-gallon fuel tank. A capped fuel filler tube protrudes through the floor. Between the seats on this vehicle is a storage box.

A zippered fly-type flap on the front of the seat allows the cushion to be removed from the water-resistant canvas seat cover.

The fuel filler cap is located next to the right passenger's seat. An axe is stored below the door opening, with the handle resting on the battery box.

The vertical pin, which locks the folding shield of the door in place when raised, is toward the upper front of the door. Below it is the three-position doorstop found on early-production M3A1s. Attached to the map compartment door in the cab is a small placard emblazoned with the crossed-sabers insignia of the U.S. Cavalry.



On the rear of the inside of the right door are the handle/latch and, above it, a sliding bolt for locking the door shut.

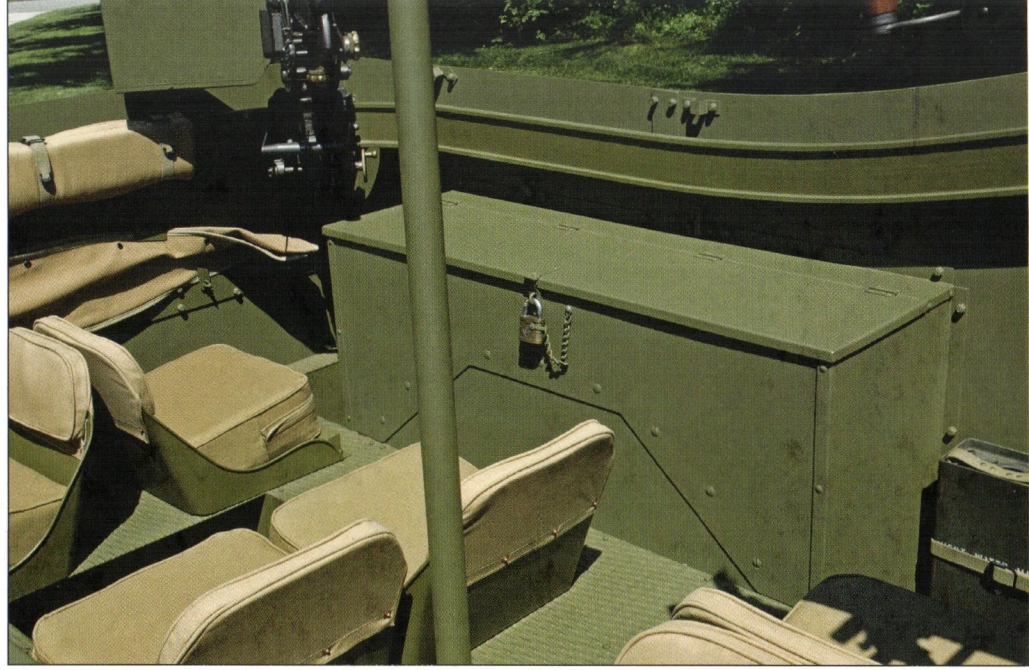
The three-position door stop on the right door is seen here close up. To the left is the lever for operating the radiator shutters.

To operate the three-position door stops, a pin with retainer chain is inserted through the assembly at one of three fixed points of door travel. The door can be locked in three predetermined positions, allowing it to serve as a shield during partially dismounted operations.

The space to the rear of the driver's seat (right) is detailed here. On the left is the front corner of the left-hand ammunition box, fabricated from riveted sheet metal and furnished with a hinged cover. Strapped to the body of the vehicle are two M1A1 water chests, which supplied cooling water to the M1917A1 .30-caliber machine guns.

The rear compartment and driver's compartment are seen in this view from the rear of an M3A1. Flanking the seats are two large ammunition storage boxes with padlocks. Provisions were made for placing as many as six seats in the rear compartment.

The front and rear seats in the rear compartment are mounted sideways, back to back, while the center two seats face to the rear. Below the crash pad on the rear of the track is a crosscut handsaw in a canvas cover.



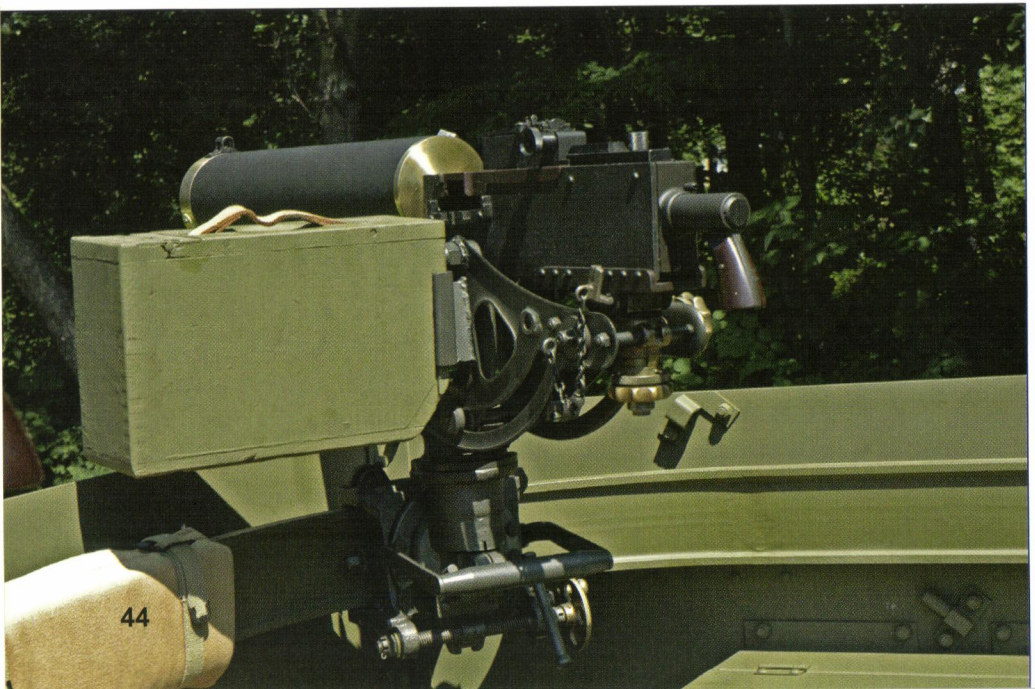
The machine gun tracks or tourelles of early M3A1s had smooth inner surfaces. On later-model cars, vertical pairs of bolts were arrayed around the vertical inner surface of the track and were fastened to brackets that, in turn, were bolted to the body.

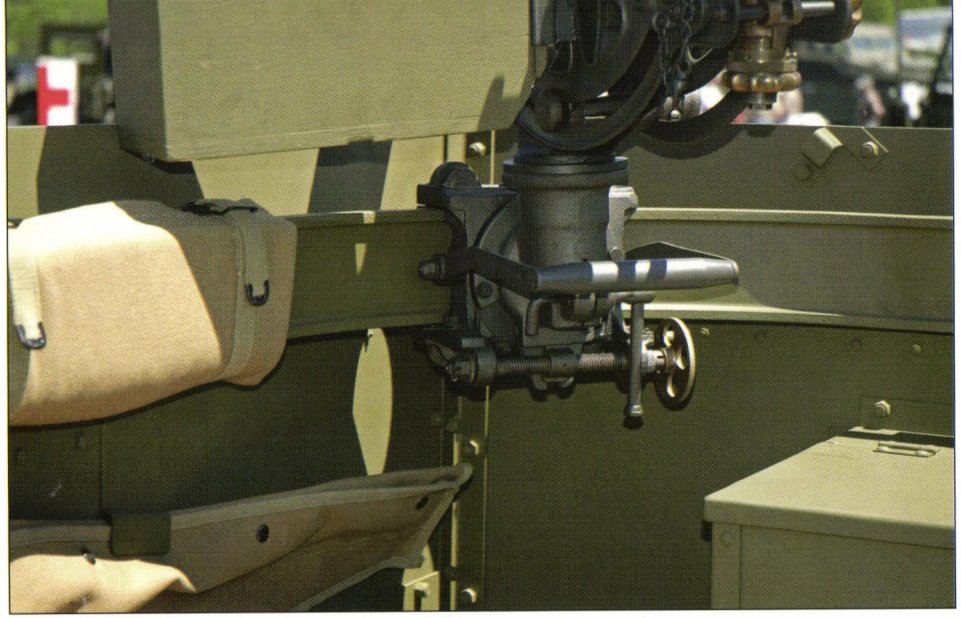
The hasp lock and padlock on the ammunition locker are seen up close. A retainer chain is attached to a metal loop riveted to the case of the lock and to a stud on the side of the locker.

The rear compartment of an M3A1 is seen from the front right door. On the inside of the body plate at the lower left of the photo is a mounting bracket for the forward bow. To the right of center is the mast for the radio antenna.

Details of the rear seats, with their snap-on cushions, the diamond-plate flooring, and the base of the radio antenna mast are seen in this photograph.

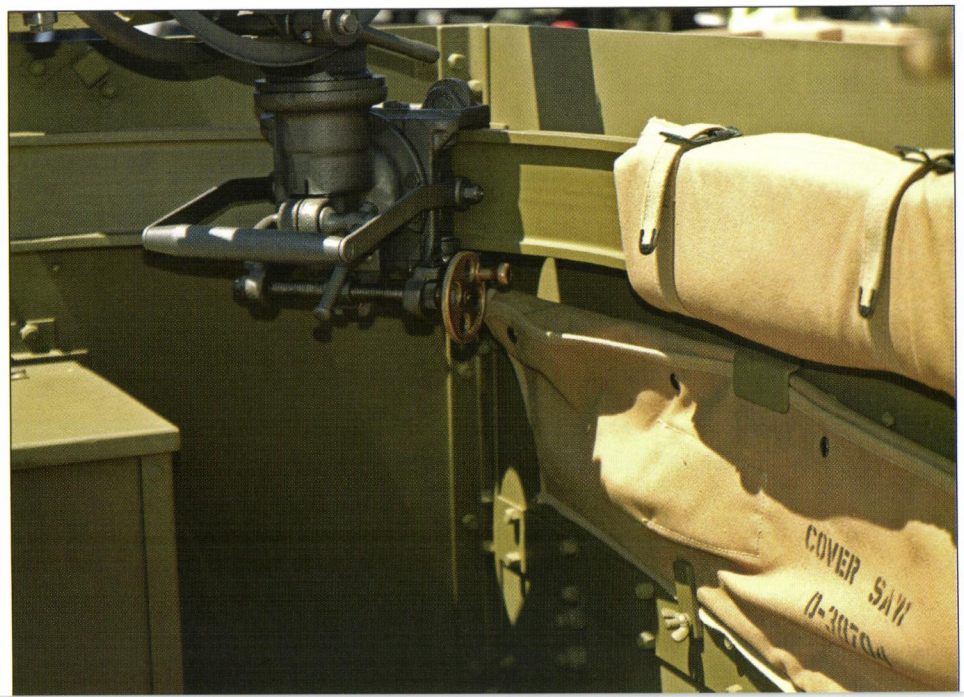
A fingerjointed wooden ammunition box is mounted on the cradle. To the rear of the cradle are two brass thumbwheels that allow fine adjustments in the elevation and traverse of the gun. The necessity of routing condensation hoses from the cooling jacket of the M1917A1 machine gun to a water chest proved cumbersome. Many M3A1s would be equipped with air-cooled M1919A4 .30-caliber machine guns, which didn't require the hoses and water chests.





In this close-up of the rear of the M1917A1 machine gun cradle and the M30 machine gun rolling mount, the pintle clamp handle is hanging down at the right of the mount. The horizontal screw and the handwheel of the canting mechanism are at the bottom of the mount.

The right rear corner of the interior of an early M3A1 is seen here. Toward the lower part of the rear of the vehicle (bottom right) is a frame crossmember to which the bottom of the top rear plate and the top of the bottom rear plate are bolted. This feature was absent on late-production M3A1s, on which the rear of the body comprised a single plate.

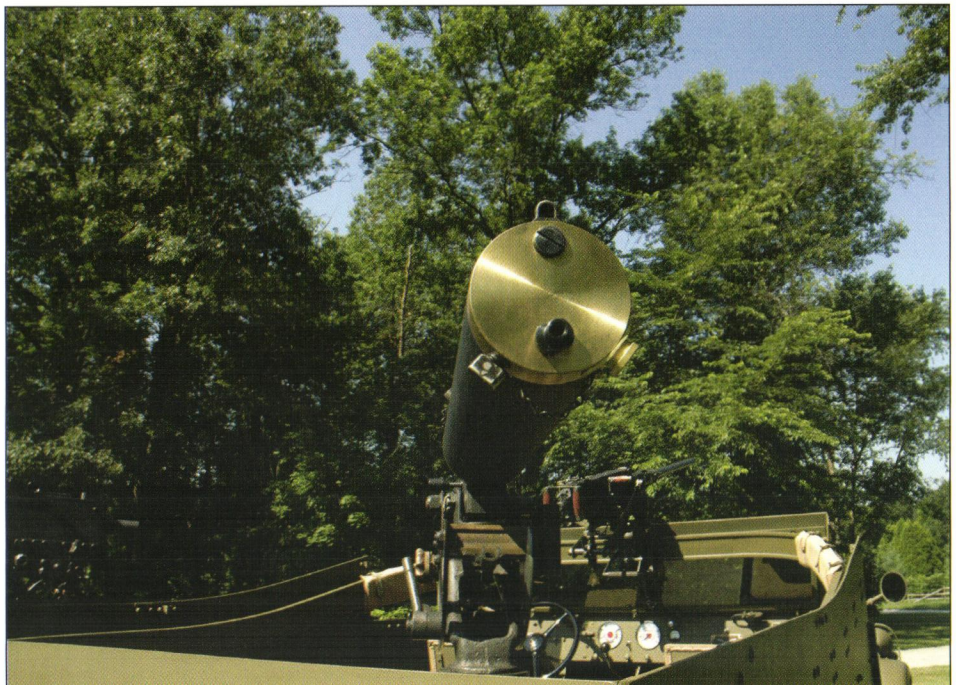


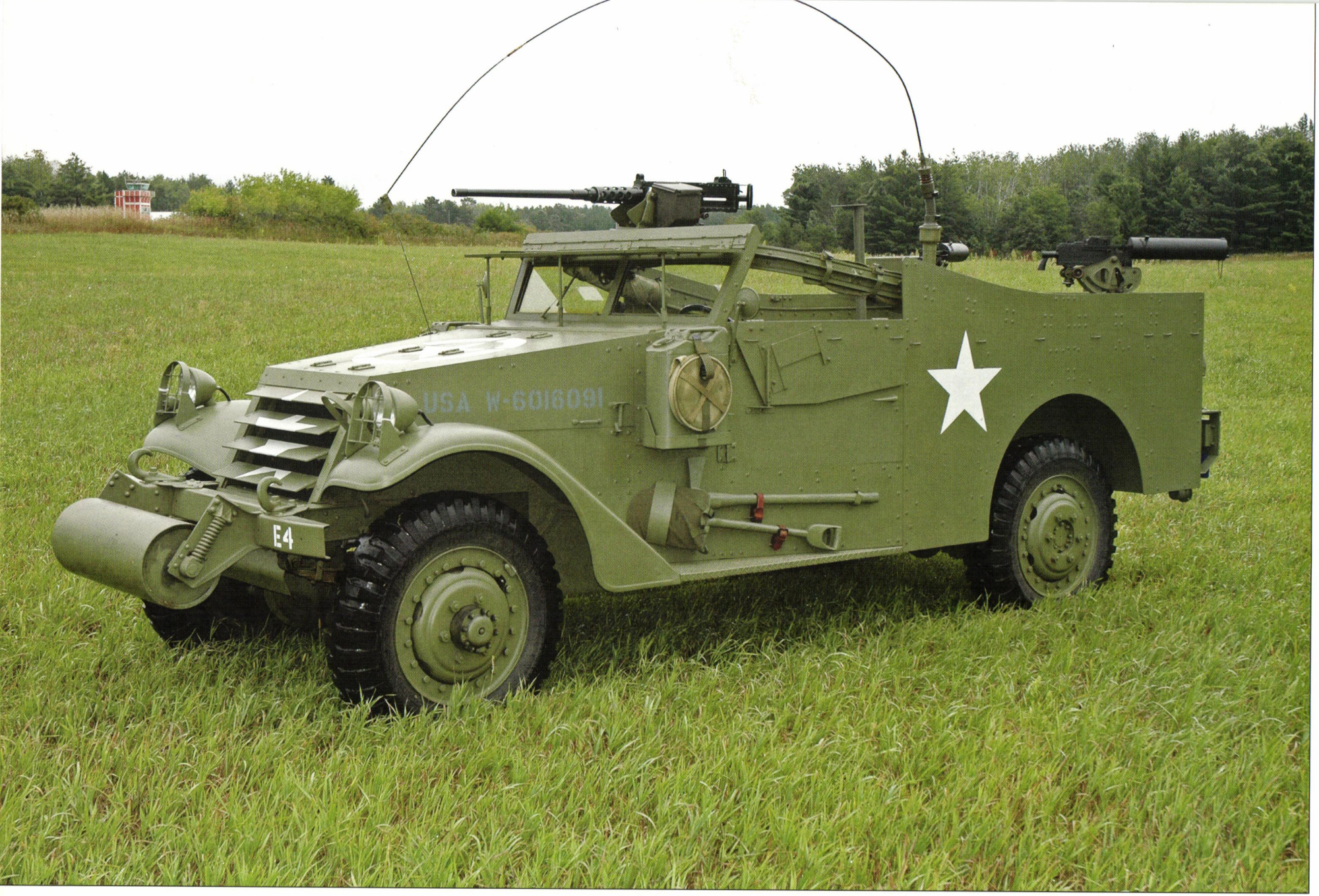
In this view of the top of an M30 machine gun carriage at the right rear corner of the vehicle, the vertical top rollers ride on the top surface of the track, while the horizontal rollers bear on the outer edge of the track. Not visible are the two lower sets of horizontal and vertical rollers.

The Browning M1917A1 machine gun with its water-cooled barrel was initially used on White scout cars, but the Browning M1919A4 with its perforated barrel sleeve for air-cooled operation was found on some later vehicles.

The barrel of the M1917A1 .30-caliber machine gun protrudes from the bottom of the front cap of the water jacket on the business end of the weapon.

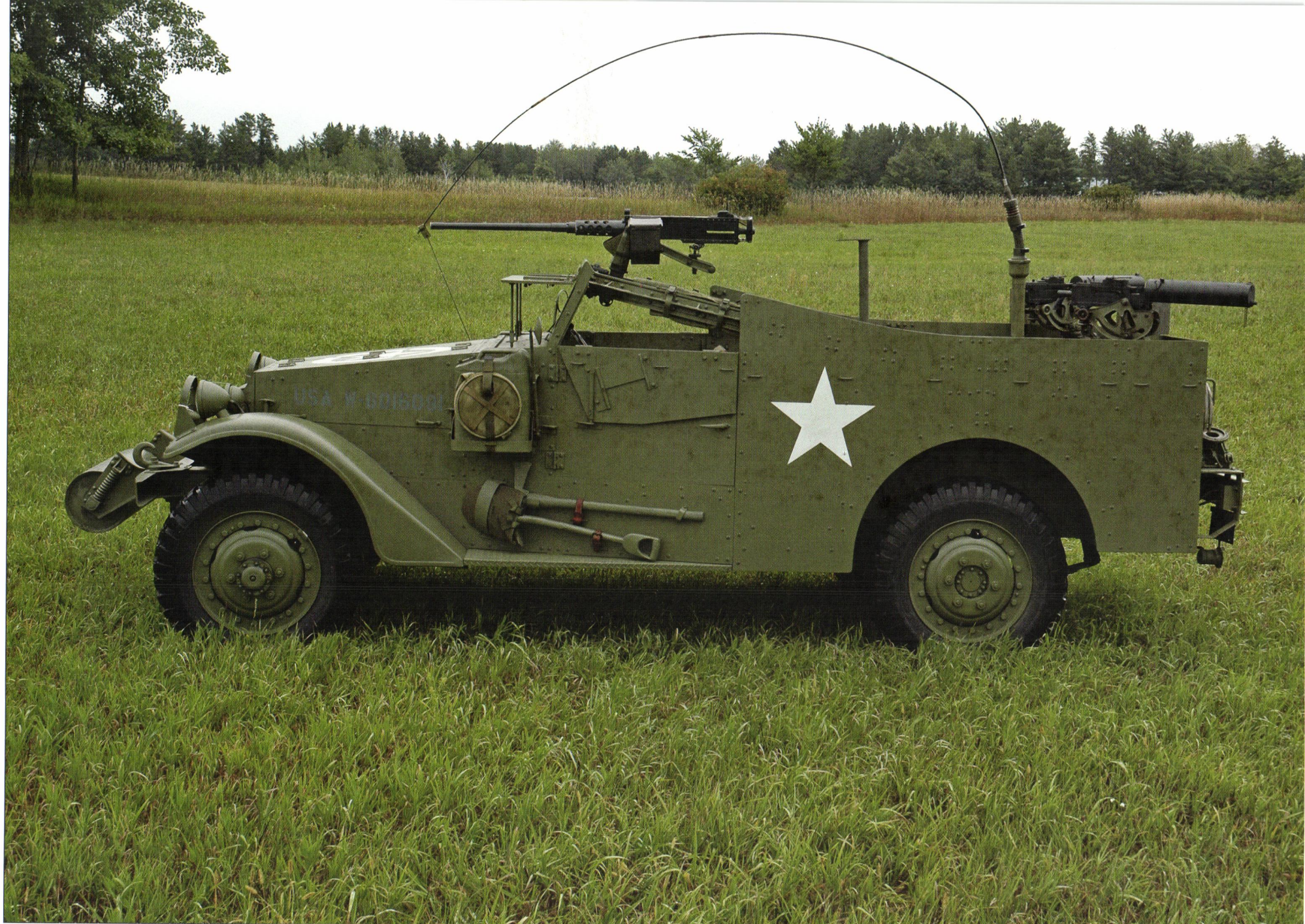
Toward the bottom of the front cap of the jacket protrudes the fitting to which the water hose running to the separate water can is attached. A small chain acts as a retainer for the cap of the fitting.



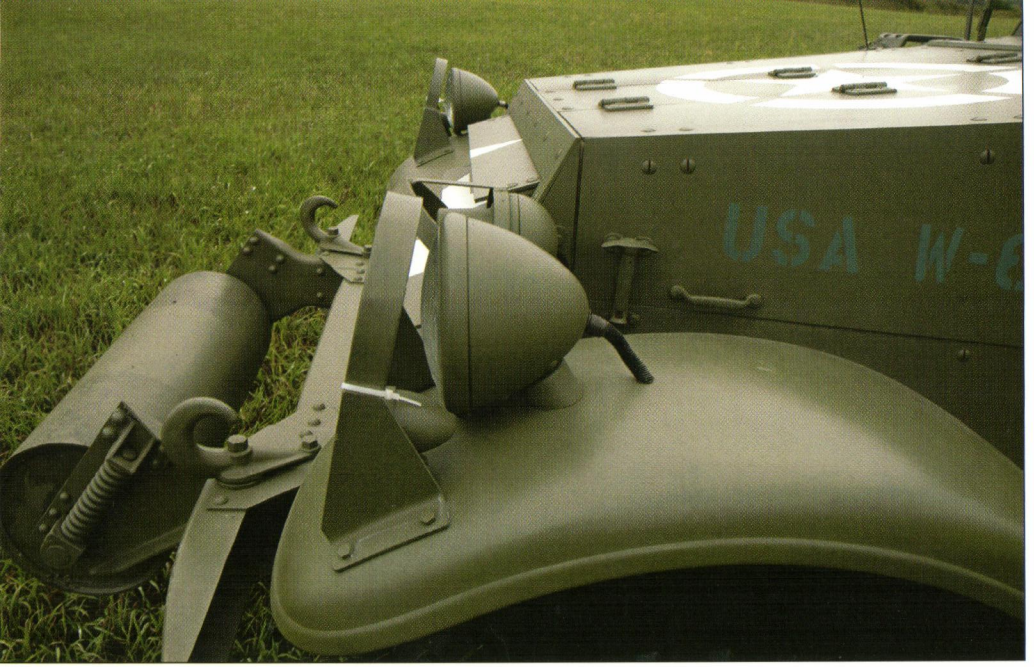


Late M3A1

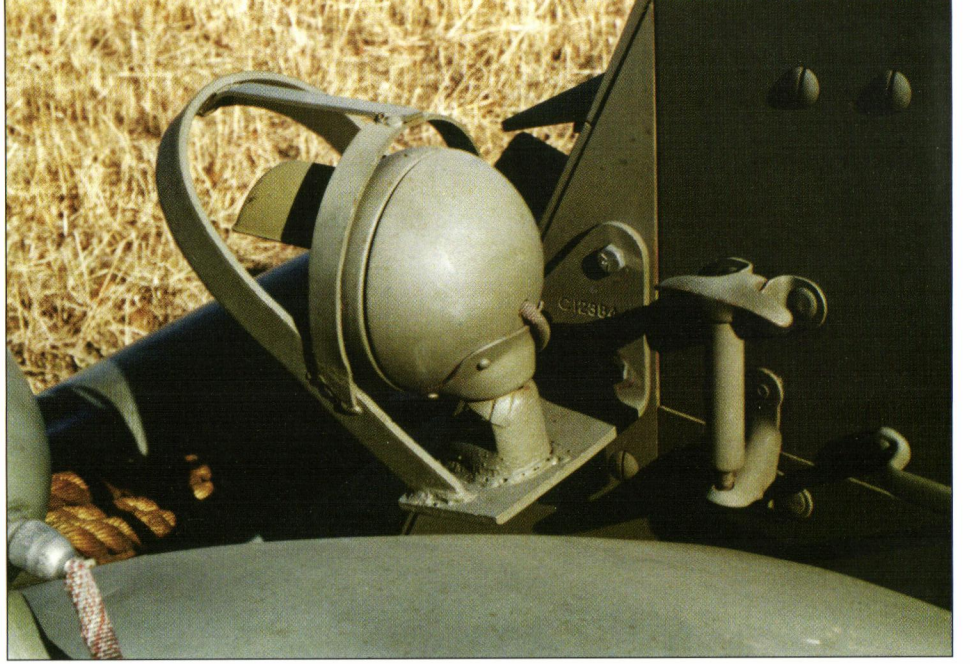
This M3A1 displays characteristics of late-production vehicles, including liquid container holders in front of the side doors, combat rims, and a blackout headlight mounted on the left side of the radiator cowl.



In addition to an antenna mast at the center of the rear compartment, there is another mast holding a whip antenna toward the center of the inner left side of this late-production M3A1.



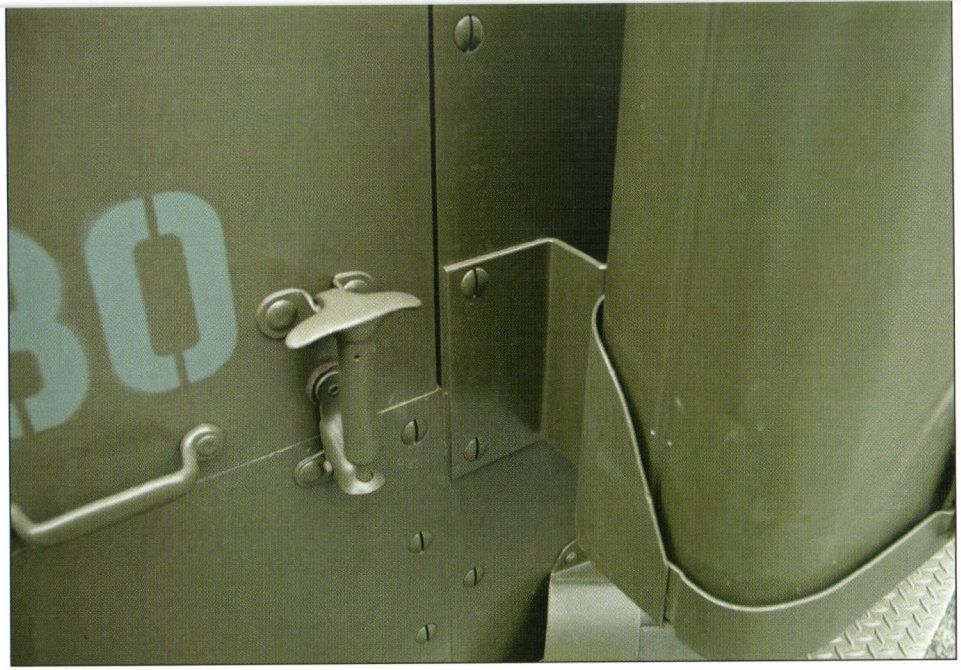
The left headlight and brush guard are seen from the side. There is a blackout headlight inboard of the headlight.



Details of the blackout headlight assembly, including the brush guard fabricated from metal strips, the mounting bracket, and the small hood over the lens are seen here.

The tire is a United military type 8.25-20, nylon, with nondirectional tread. There are six small cutouts in the center disk of the combat rim.

A five-gallon liquid container is secured in its holder by a canvas webbing strap. The folding panel of the door is secured with a sliding bolt to a latch on the door.

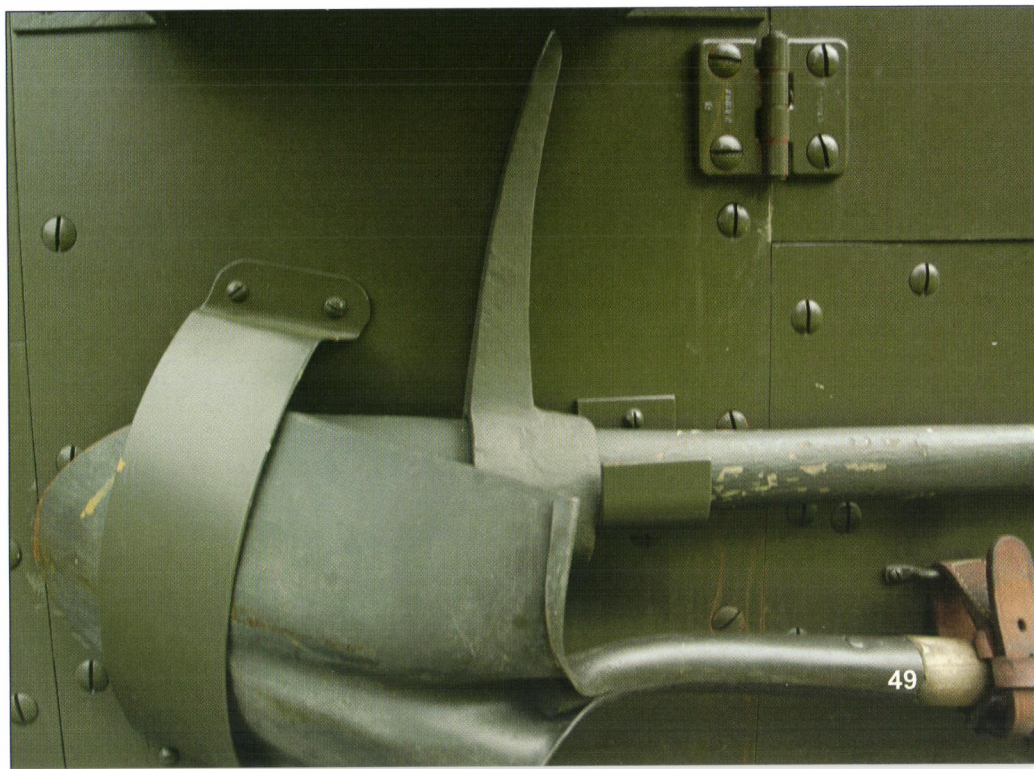


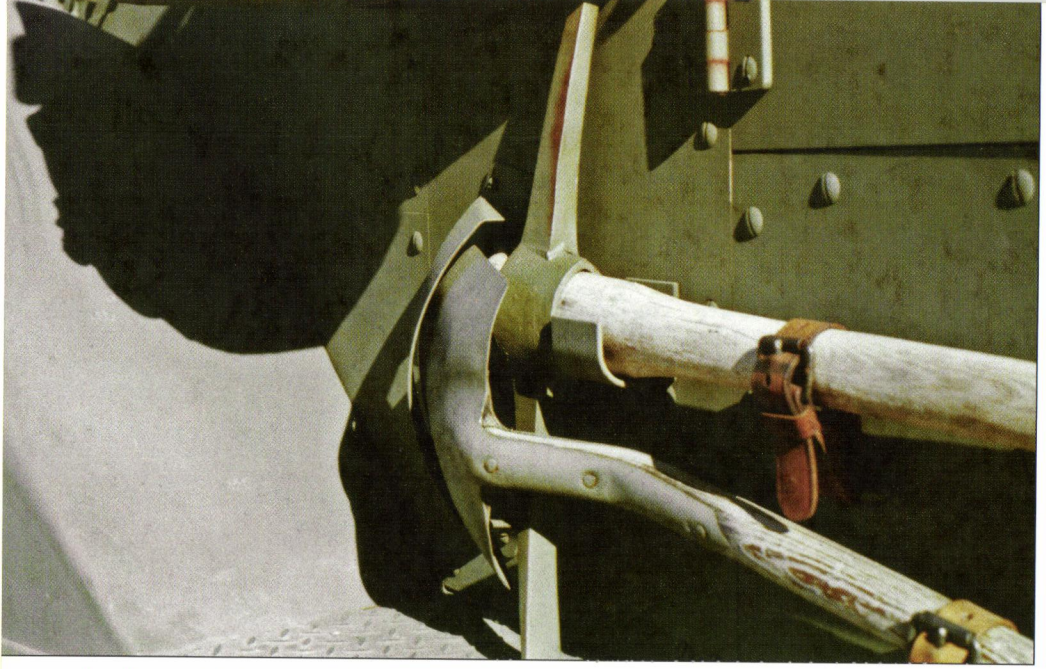
Oval-headed slotted screws attach the liquid container holder to the body of the vehicle. The left rear side of the hood is at the left.

The small, L-shaped part bolted over the rear of the left liquid container holder is a door stop.

Pioneer tools on the left side of late-production M3A1s are the same as on early vehicles: a shovel and a pick.

Details of the shovel and pick holders, or clips, and the lower door hinge are displayed in this close-up view.

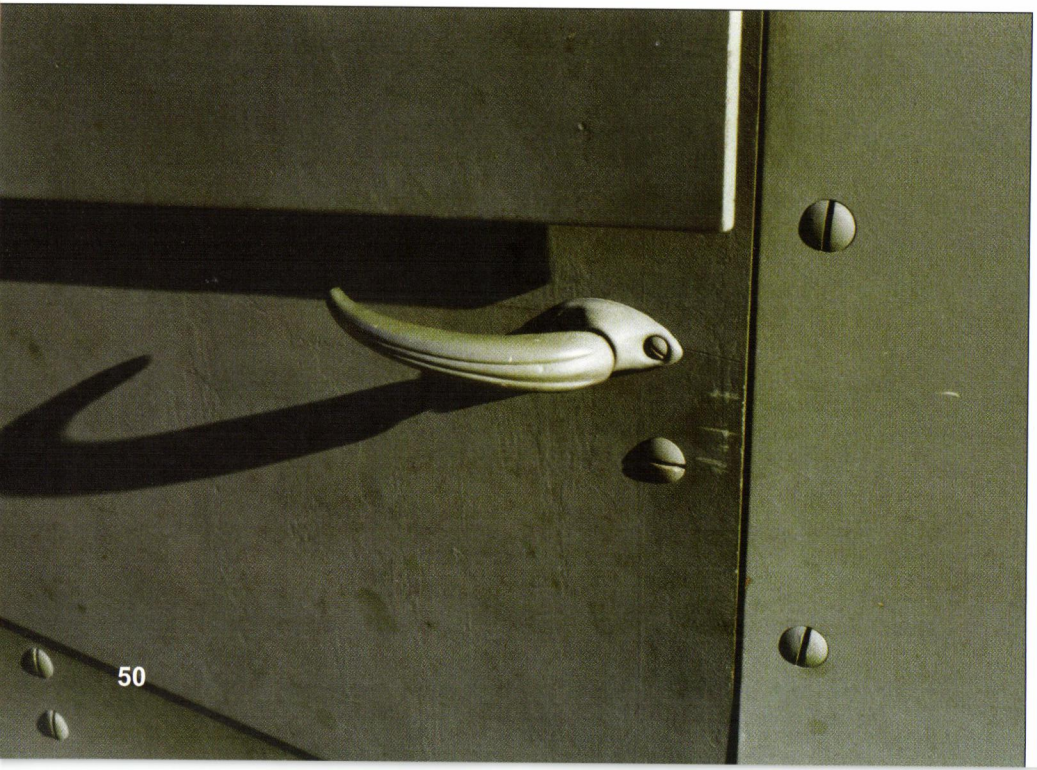




Leather retaining straps help secure the axe and shovel in place.

Part of the machine gun track and a webbing strap for a crash pad are seen in this shot of the left pillar of the windshield assembly.

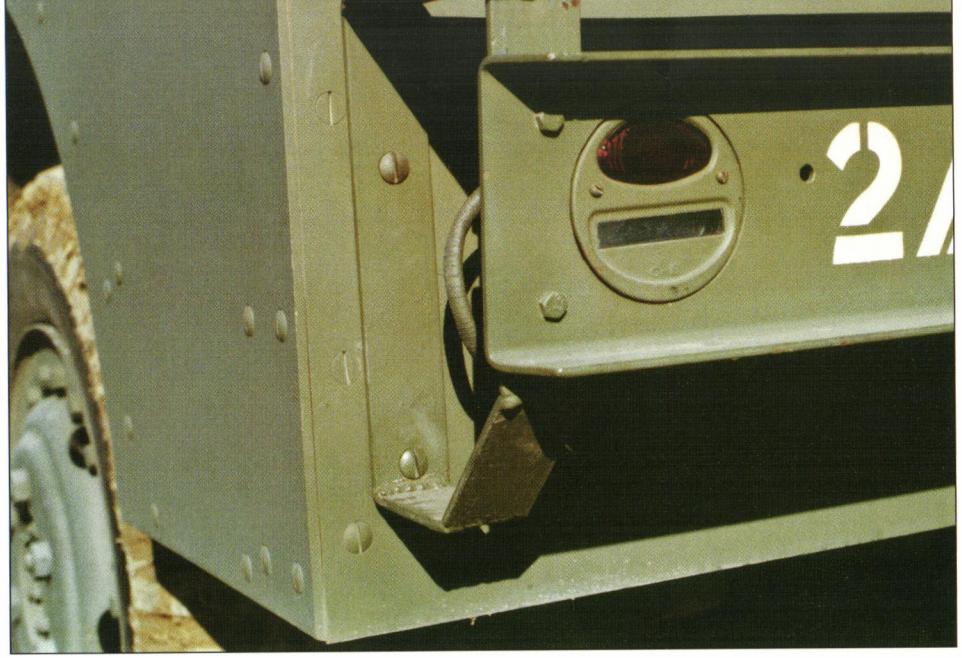
There are two grooves in the surface of the exterior handle of the left door. Above the door handle is the lowered upper plate of the door. Like the main, or lower, panel of the door, this plate was ¼-inch of armor.



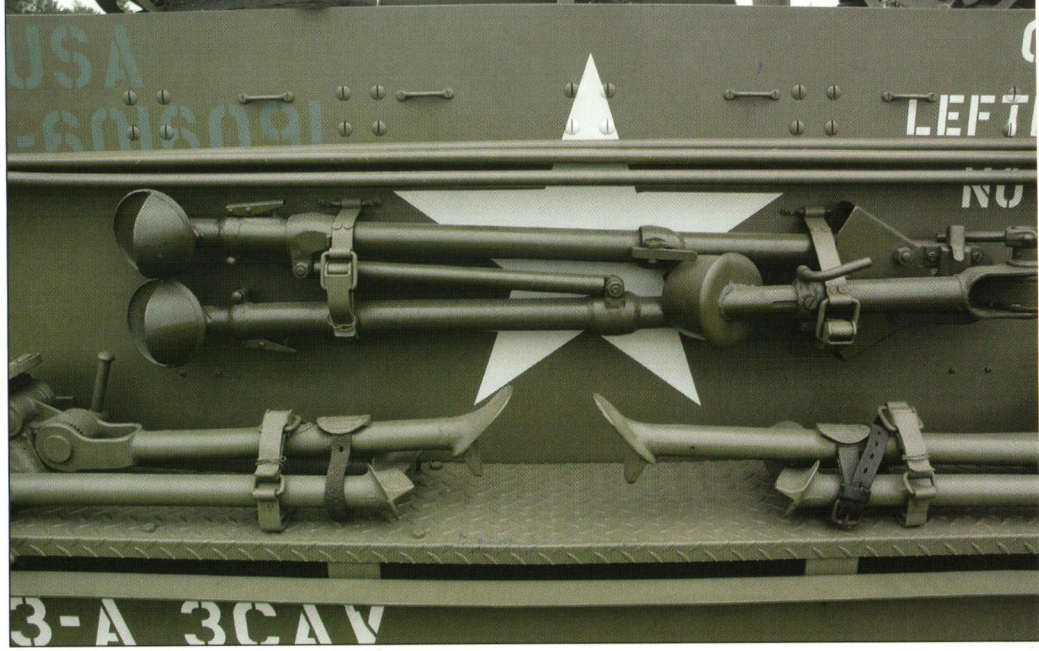
The pintle is visible through the brackets on the rear bumper on the left side of the vehicle. On top of the bumper is the pintle sleeve of an M1917A1 tripod.

Two bows have been installed over the rear compartment of this M3A1. The rear bow is angled sharply to the rear.

Knapsacks partially cover three tripods that were used when employing the machine guns dismounted: an M3 tripod (top) and two M1917A1 tripods.



Unlike the early-production tail light assemblies, with the two football-shaped lenses, later M3A1 tail lights had an oval upper lens and a slot-shaped lower lens.



Another characteristic of later M3A1s is that the rear edge of the diamond plate over the bumper is bent down at a 90-degree angle, forming a thin vertical flange.

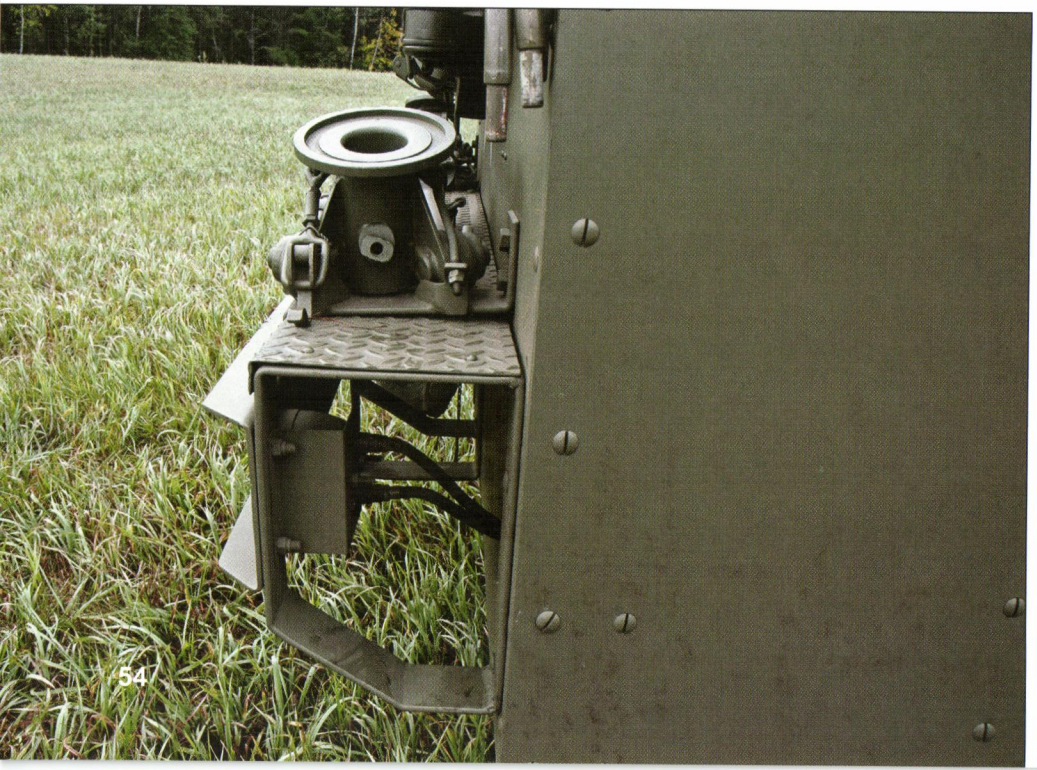
A pintle is mounted at the center of the frame below the bumper.

Flanking the pintle are the two inner brackets for the bumper.

The three bows are shown stored on the rear grab handles. They support a waterproof canvas top when installed.

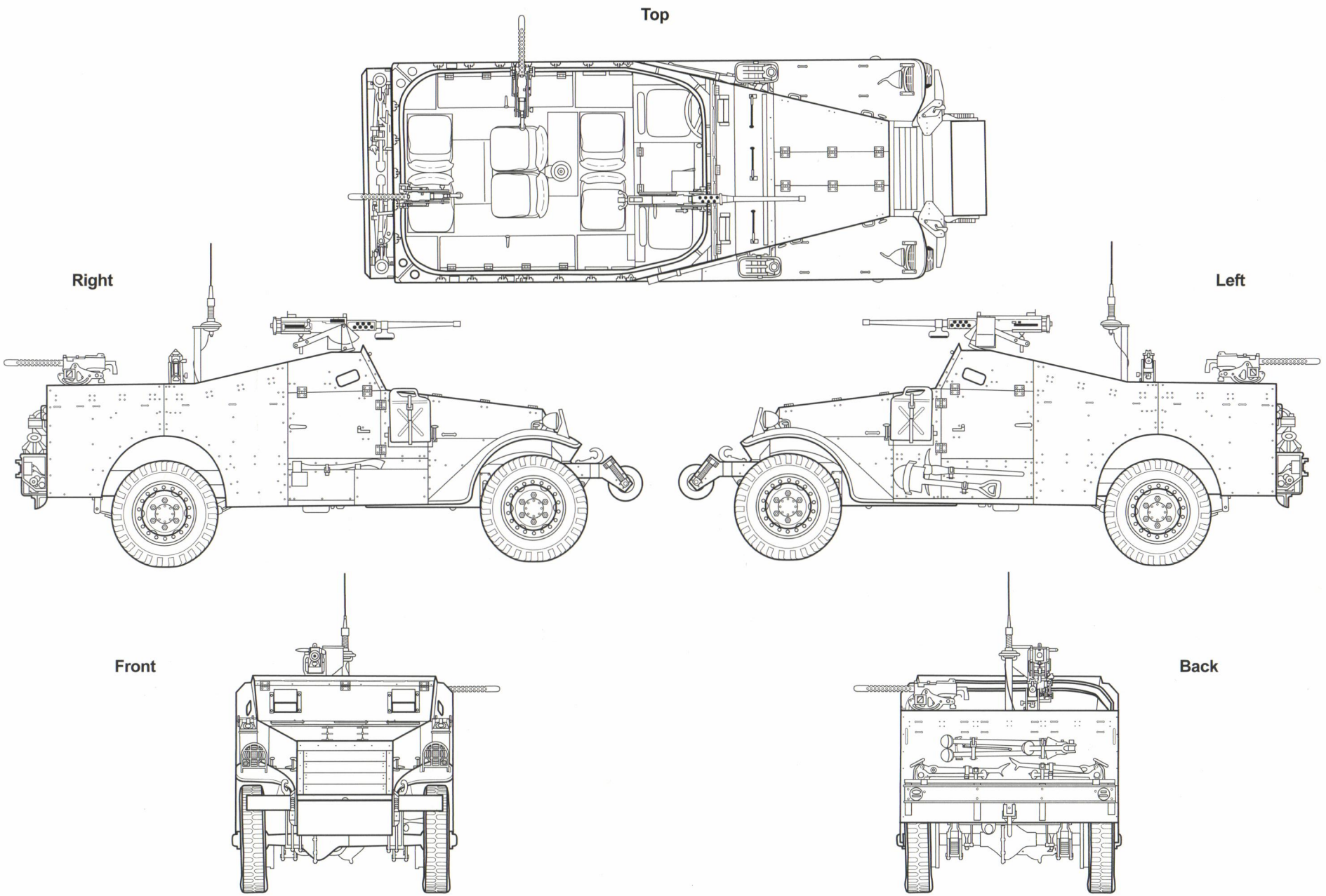
The footman loops on the rear of the body make handy hangers for clipping on three knapsacks.

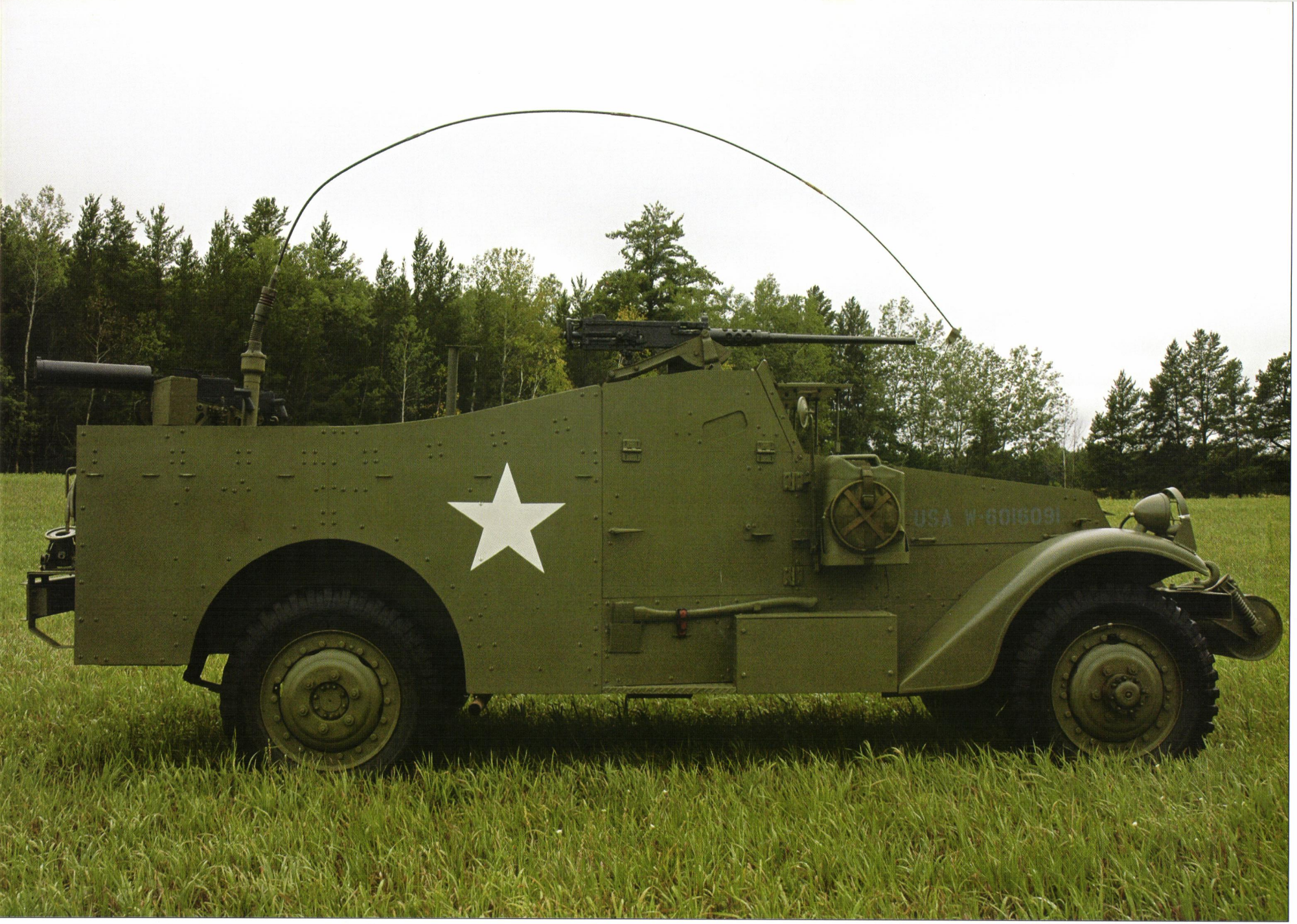
Below the pintle socket of the tripod is the rear of the right tail light, seen here from the side, with associated wiring.



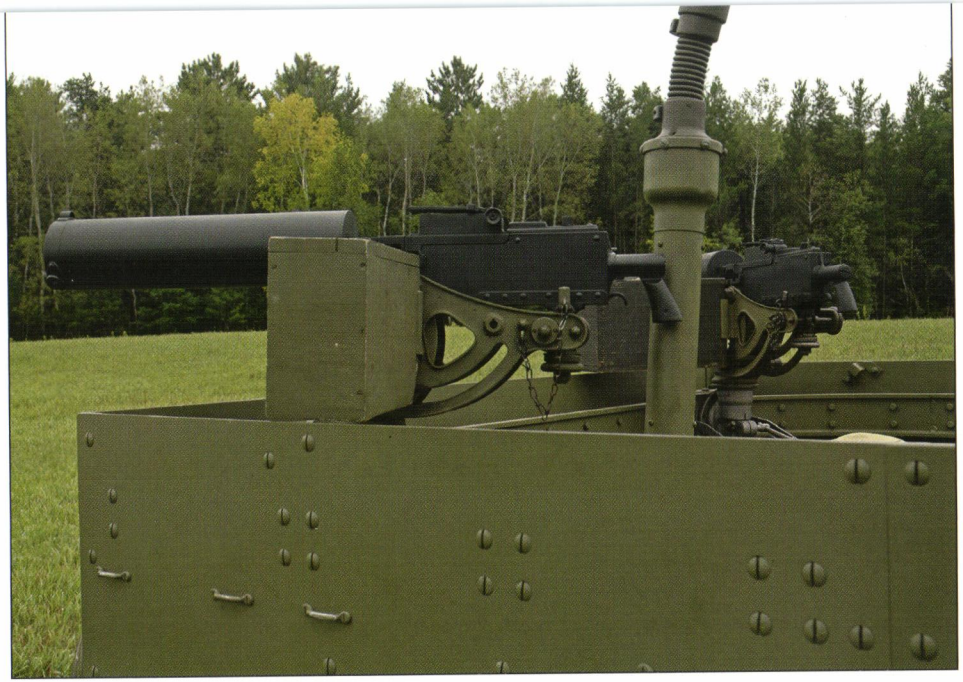
The scooped-down profile of the M3A1 left the crew vulnerable to fire from behind, and the open compartment was an inviting target for enemy hand grenades.

Late Production M3A1





The patterns of the slotted-head machine screws and footman loops on the sides of the late-production vehicles were virtually identical to those on the early vehicles. From the sides, the main difference was the presence of liquid-container holders.



Two Browning M1917A1 .30-caliber machine guns flank an antenna mast mounted on top of a radio at the rear of a late M3A1 scout car. The ammunition boxes are made of wood.

This view shows the left side of an M1917A1 machine gun cradle with the .30-caliber gun dismounted. The elevating/traversing mechanism is at the rear of the cradle and there is a bracket for attaching the ammunition box.

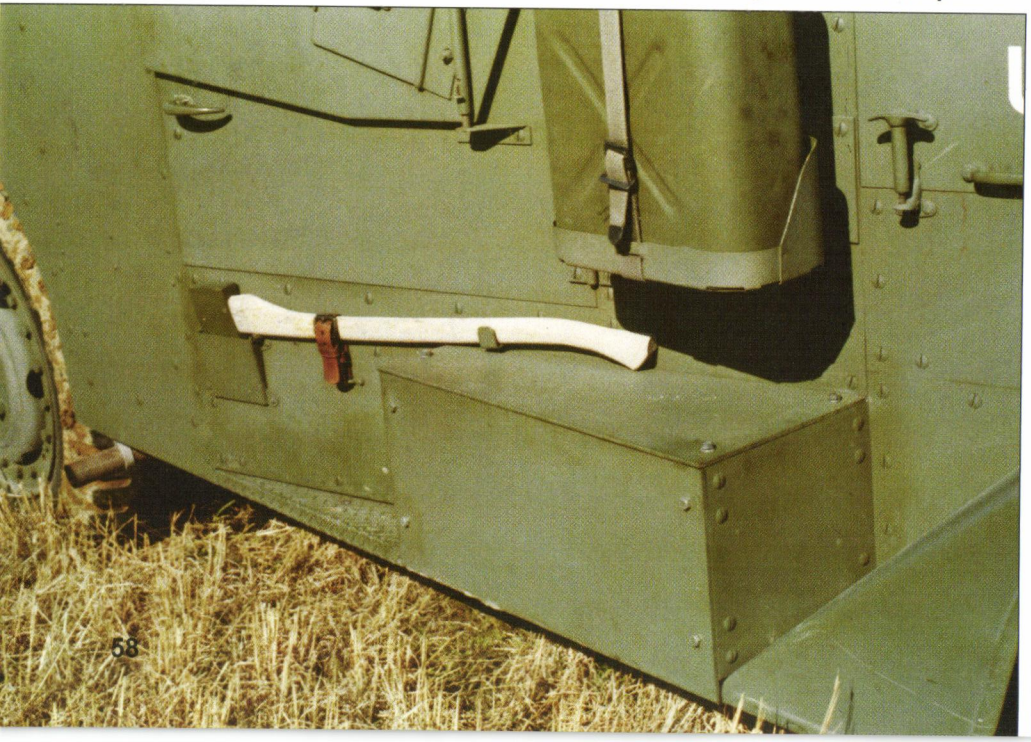
The exhaust outlet on late M3A1s is to the front of the right rear wheel well. A mounting strap is mounted on the tail pipe close to the side of the body.

The armored shield of the right door is in the raised position, and the armored, sliding cover of the vision port is shut.

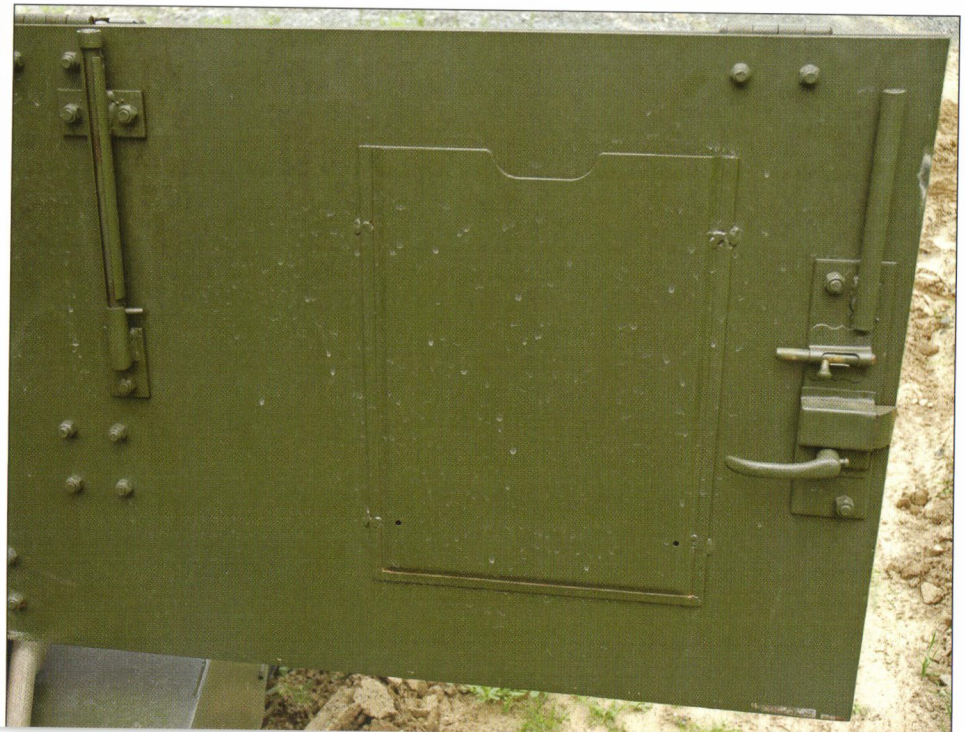
The M2 machine gun and cradle, machine gun track, and driver's compartment are seen through the open door. The tie-down cord for the whip antenna is visible.

This close-up shows the gun track at the right door, the crash-pad straps and, to the right, the windshield.

The top and outside plates of the battery box are removable and are held in place by hex bolts. Oval-head slotted machine screws are visible on the front plate of the box. The axe rests in brackets and is secured with a leather strap through a footman loop.



A pocket for the lube order (sometimes called a map case) is tack-welded onto the inside of the passenger door of some M3A1s. The movable rod housed in the holder at left was used to secure the armored door flap in the up position.



The right headlight, mount, electrical cable, and brush guard are seen from behind.

This M3A1's headlights sport canvas covers. The outer bumpers are staggered forward of the section behind the roller. The registration numbers are painted blue-drab. The U.S. Army adopted this color for vehicular registration numbers in late 1940 as a less conspicuous alternative to the former white paint.

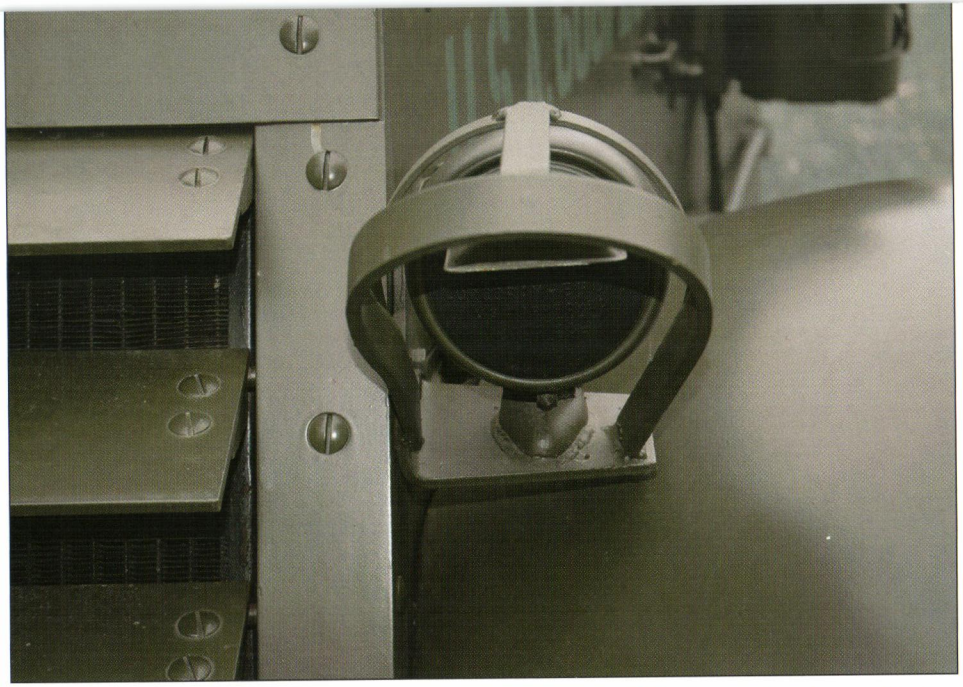
Details of the six-slotted combat rim of the front wheel are seen here. Although 8.25-20 tires were specified for the M3A1, this vehicle is mounting 9.00-20s.

In this side view of the roller assembly of a late-model M3A1, the part number (E3804) is seen cast into the side of the roller. The national star is painted in segments on the radiator shutters.

Late-production features seen in this frontal view of an M3A1 scout car include the liquid container holders and the blackout headlight and brush guard on the right side of the radiator cowl.

The front left tow hook is attached to the frame gusset with large hex bolts. There are rust spots on the hook and the edge of the bumper.

Left to right are the blackout headlight, left headlight, and left blackout marker lamp.



The blackout light is fitted with a black cover over most of the lens; a hood over the top of the lens (visible under the brush guard) prevents observers above the level of the vehicle from being able to see the light.

This right headlight has a canvas cover fitted over the lens. The blackout marker lamp is to the outboard side of the headlight.

The front mount of the engine is visible above the front axle and split-type differential of a late-production M3A1. U-bolts hold the axle to the springs.

The transfer case protector channel is prominent below the frame in this view of the underside of a late M3A1. The view is towards the rear of the vehicle, with the rear axle and differential in the background.

The left front suspension, with the front U-bolt, spring, spring clips (with bolts and hex nuts securing them to the spring), and shock absorber link are on the left of the photo, and the drag link, brake line, and steering knuckle flange are the right.

At the center is the shock absorber link at its point of attachment to the arm of the shock absorber. To the right of it is the drag link, with its slotted plug at the front which, when loosened, allows the drag link to be disconnected from the steering knuckle arm.

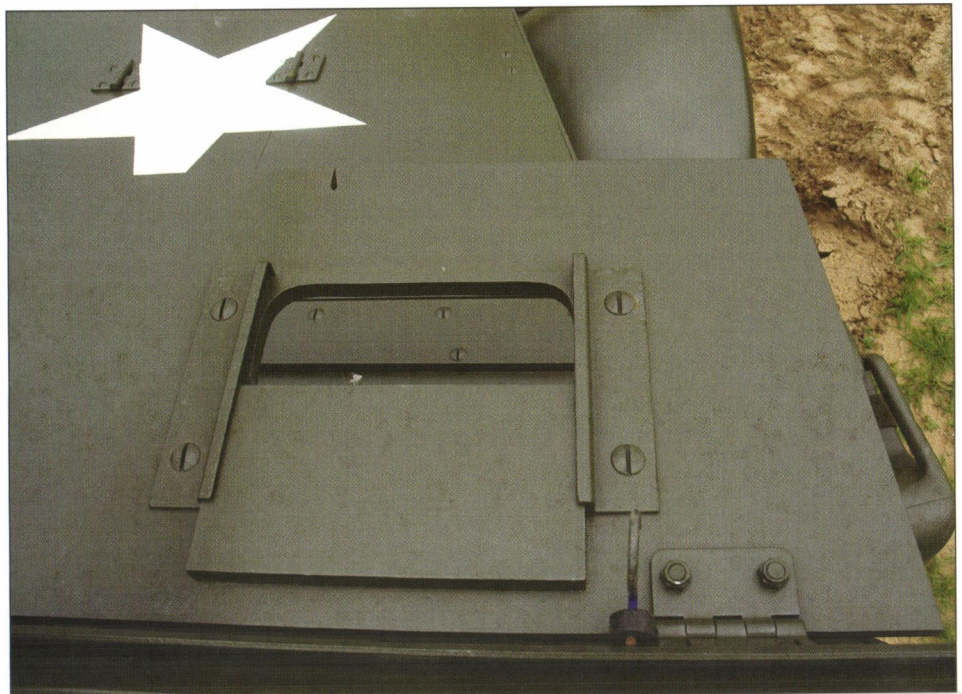
The transfer case protector channel, with the propeller (or drive) shaft to the front axle is to the right, and the left rear tire is to the left of the photo. At the top of the photo is the underside of the battery compartment.

The underside of a late M3A1 is seen facing toward the front, from the front of the right rear tire. There is bracing under the battery compartment and an armor plate protecting the bottom of the right gasoline tank in the foreground.

The front axle of a late M3A1 is seen here from the front. There is a lubricant filler plug on the front of the differential, with oil staining around the area, and the curved part of the tie rod to the rear of the differential.

The top of the hood is seen here from over the windshield. The center panel of the hood normally remained fixed in place, with the outer, hinged panels being opened when servicing the engine, but the center panel could also be unscrewed and removed.

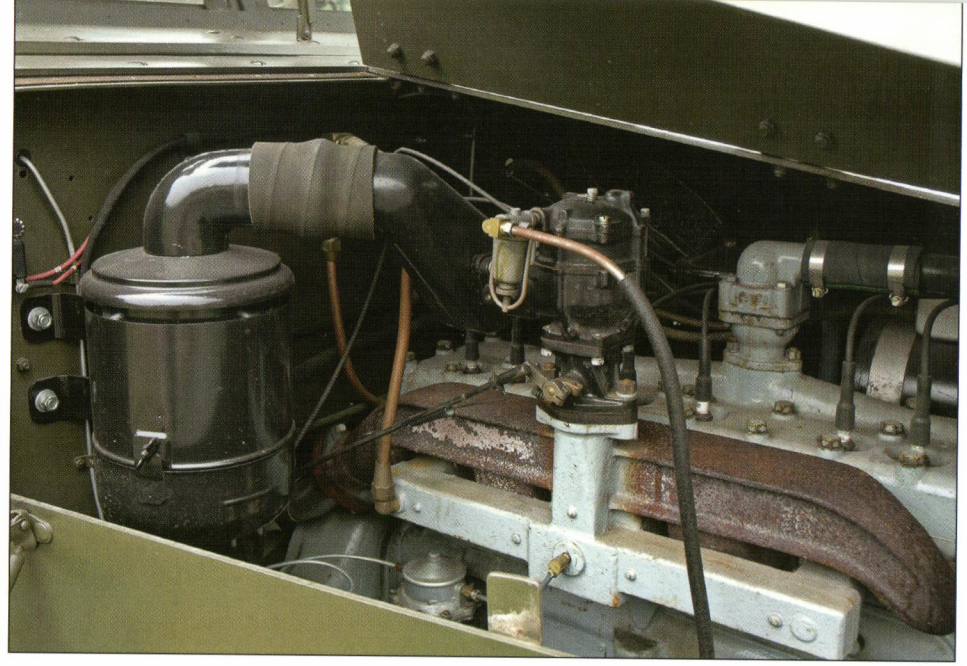
The right side of the armored shield is seen here from above. The guides for the sliding panel over the vision port are fastened to the 1/2-inch armored shield with large, slotted oval-headed bolts.



The top of a five-gallon liquid container is photographed from over the front passenger's door. The relatively complex contours of the pressed-steel fender assembly are apparent.

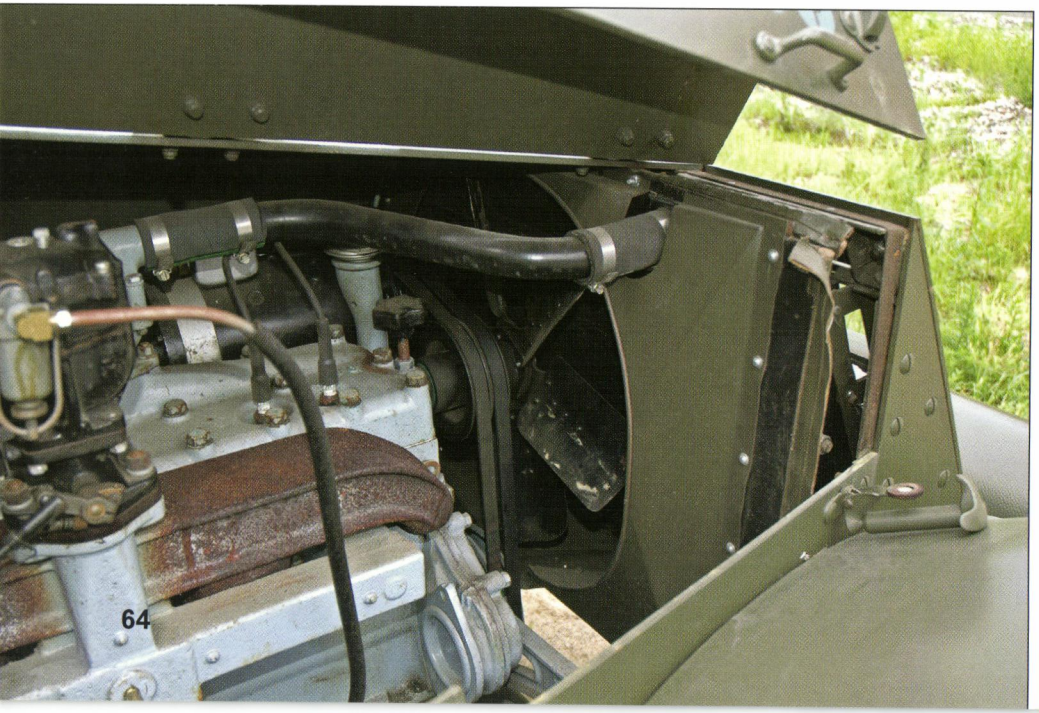
The right side of the engine compartment of a late-production M3A1 is seen here. The oil-bath air cleaner is the large cylinder to the left.

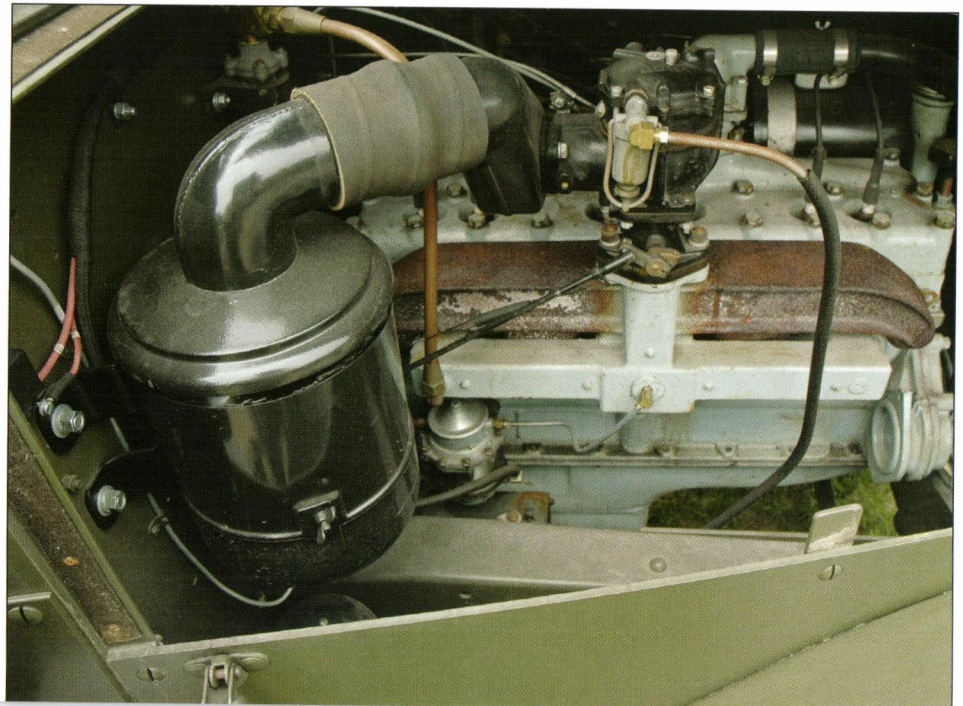
The fuel line, connected to the fuel filter, is in the foreground in this view of the radiator shroud, fan, hose, and dual belts. The rusty fixture below the carburetor to the left is the exhaust manifold. The light-colored object attached to the carburetor is the engine intake manifold, or elbow, which extends below the exhaust manifold.



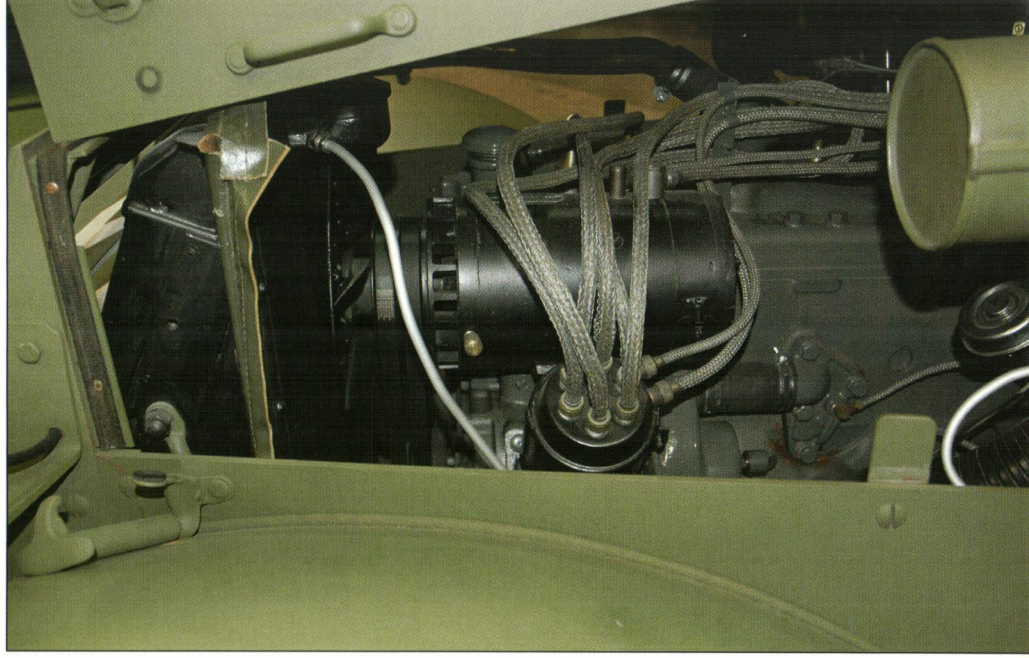
The air intake of late M3A1s enters the carburetor from the rear, rather than the top, of the carburetor, as it had on early M3A1s. In addition, instead of the glass fuel filter cup of early-production vehicles, the late ones had a metal cup.

The oil-bath air cleaner is fastened to the dash with four nuts and bolts. The oil cup at the bottom of the assembly is removable, for cleaning the unit or replenishing or replacing the engine oil that the cup holds.



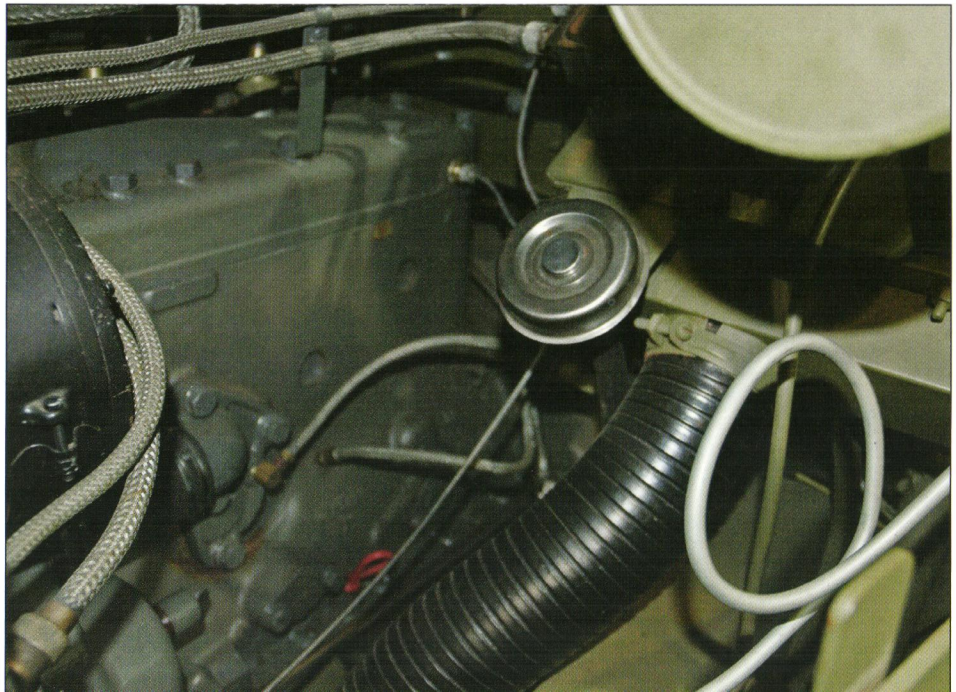


The horizontal, cylindrical object to the right is an auxiliary water condenser found on later M3A1s. To the rear of it, the rectangular box with louvers on the front is the late-production cover for the ignition coil.

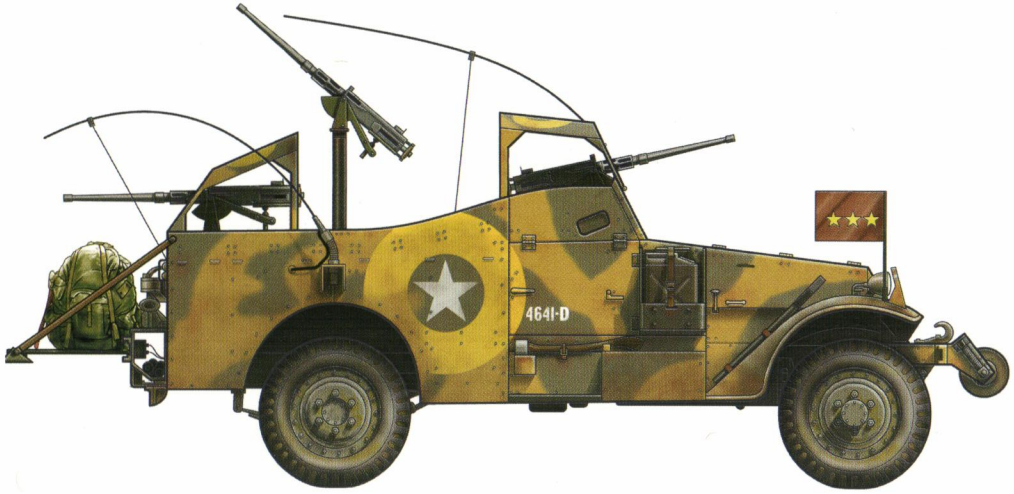


Late M3A1s had a redesigned distributor with a cup-shaped cap and, below it, a cylindrical distributor shield. Between the ignition wires and the engine block is the black generator.

The bright metal cap is the vacuum booster air cleaner (the vacuum booster is out of view, at the bottom of the engine). The black flex tube conducts air to the driver's compartment ventilator. At the top right is the front of the auxiliary condenser.



This M3A1 scout car was used by Lt. Gen. George S. Patton in Tunisia in early 1943. Customized features included a pedestal-mounted .50-caliber machine gun, an armored gun shield above the windshield, and an armored awning at the rear.

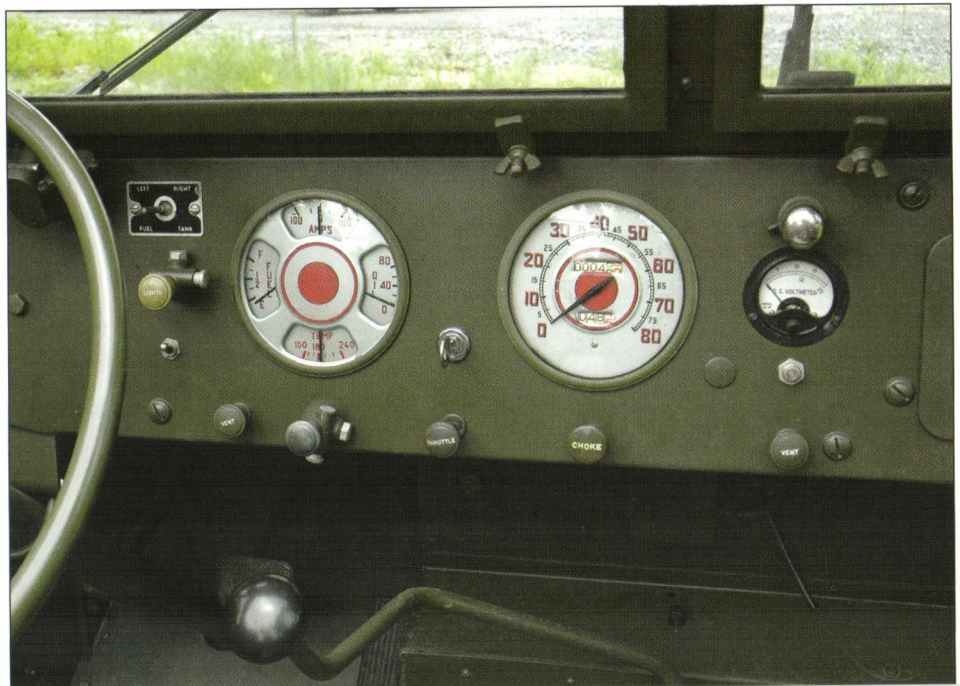


The antenna mast (with no antenna mounted) is at the center of this view of the driver's compartment and the forward end of the rear compartment of a late M3A1. There is a small ammunition box with beveled side for the M2 .50-caliber machine gun.

A D54075 cradle-and-pintle assembly mounted on an M30 carriage, with an M2HB .50-caliber machine gun installed, is seen here from the rear. Instead of an elevating and traversing mechanism on the rear of the cradle, a simple, tubular lock secures the bottom of the gun's receiver to the cradle in this example.

The layout of the dashboard of late M3A1s varied in minor details from that of early-production examples. Gauges on this late vehicle comprise, left to right, the instrument cluster, speedometer, and voltmeter. Clamps secure the two clear windshield panels in place.

The light switch to the left of the instrument cluster and the spark control below the instrument cluster were redesigned for late-model M3A1s. Also below the instruments are the controls for the left and right ventilator, throttle, and choke. The transmission shift lever features complicated curves.

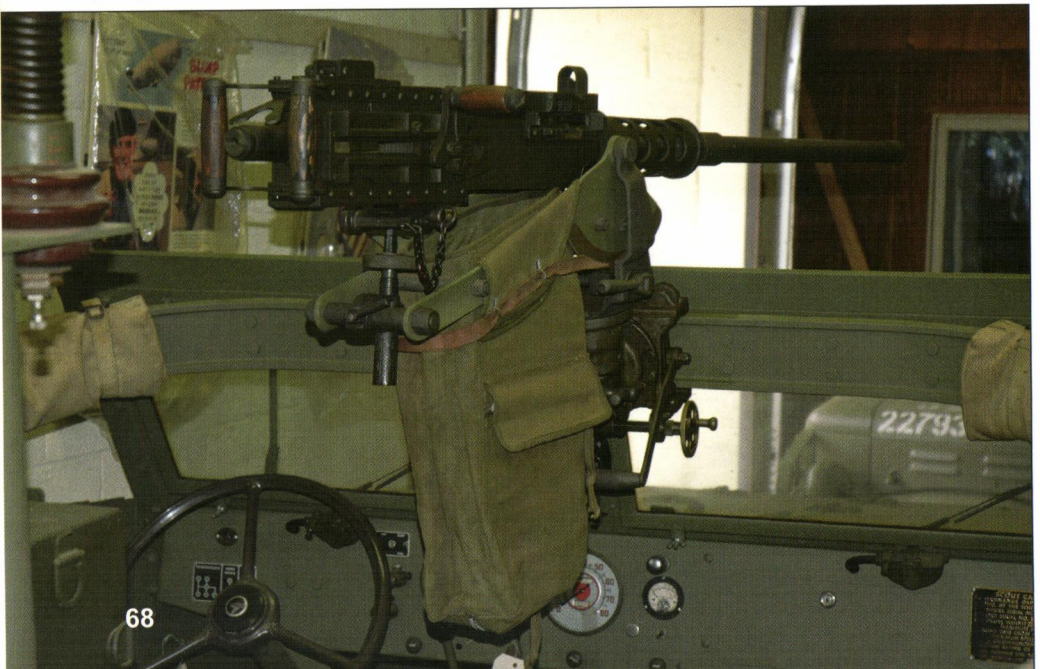


The machine gun track of late-production M3A1s had a different method of attachment to the body than early vehicles. Brackets were attached to the outside of the track with hex bolts, the heads of which are visible around the inner perimeter of the track. Four oval-headed bolts secure the outer flanges of each bracket to the inside of the body.

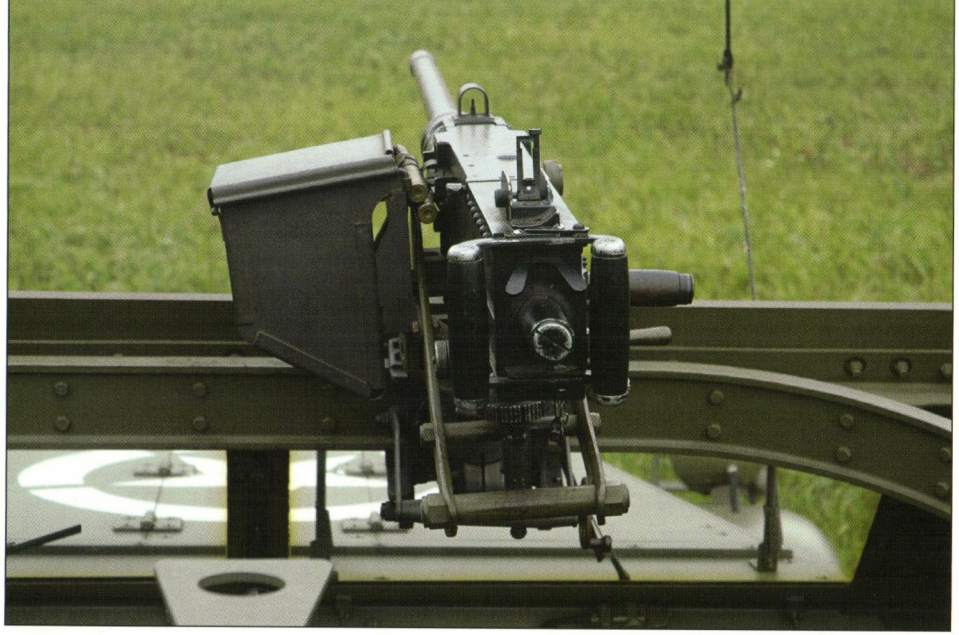
A ubiquitous crash pad is strapped to the machine gun track above the driver's seat in the front left corner of the interior of a late M3A1. A Thompson submachine gun is in a rack on the bulkhead behind the driver's seat, and to the rear of the gun are earphones, a microphone, and an interphone box.

The machine gun track and .50-caliber mount are viewed through the front passenger's door. It is a point of interest that all of the oval-headed machine screws on the body of the M3A1 were to be positioned with the slots vertical, as shown here.

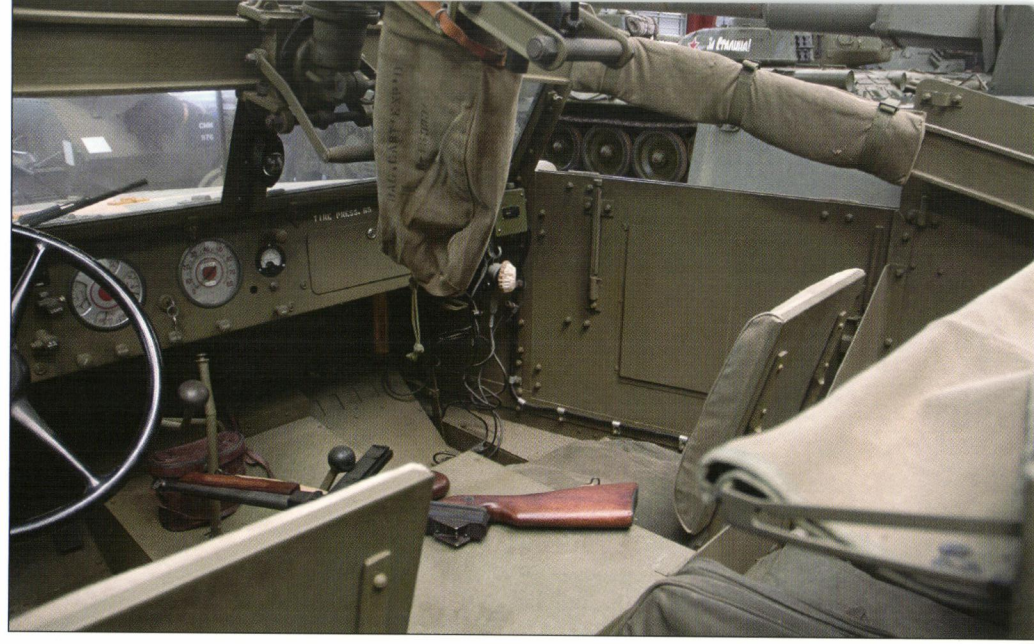
This .50-caliber machine gun mount has a canvas spent-brass collector bag installed, to hold ejected cases and links. To the far left of the photo is the antenna mast, with the spring at the base of an antenna visible.



This .50-caliber gun mount has the elevation/traverse mechanism installed at the rear of the cradle arms. There are circular holes in the barrel support to the front of the receiver, in contrast to the elongated openings of the earlier model. Attached to the side of the cradle is an ammunition tray with a beveled bottom.



Visible in this photo of an M2 machine gun on a late M3A1 are the raised rear leaf sight, the anti-glare hood over the front sight, and the thumb-actuated trigger between the grips. The removable ammunition box slides onto a mount on the side of the cradle.



In the center of this image of the front passenger area, as viewed from behind the driver's seat, is the spent brass bag under the .50-caliber machine gun. Routed around the edge of the door is a cable for a radio/intercom box at the far right side of the dashboard.

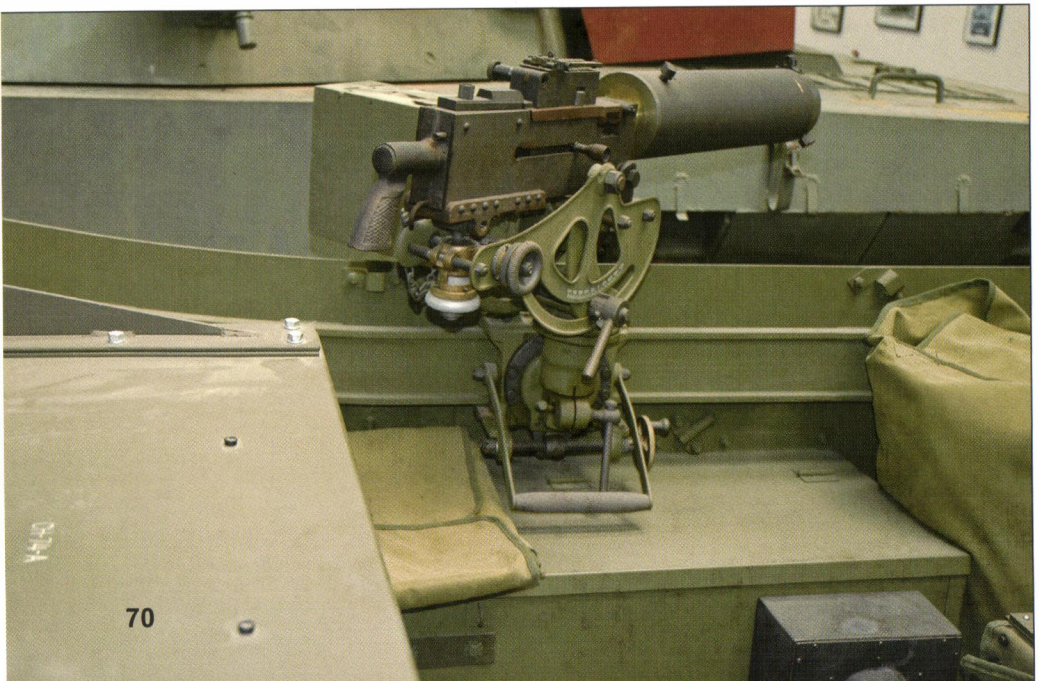
The method of securing the upper panel of the door in the raised position is shown here. The rod that is housed in the tube on the lower door panel is raised and inserted into the tube mounted on the upper panel. A chemical decontamination unit is mounted on the bulkhead.

A crash pad is strapped around the bend of the machine gun track as seen from above at the front passenger's door. The driver's and front passenger's heads were in close proximity to the protruding machine gun track or skate rail, and the crash pads helped cushion the blow when vehicular jolts caused their heads to collide with the rail.

With the right door open and the passenger's seat back folded down, the hinges on the stanchions are visible. The seat is mounted on tracks, allowing adjustment forward or back. The fuel filler cap for the right fuel tank is at the bottom center.

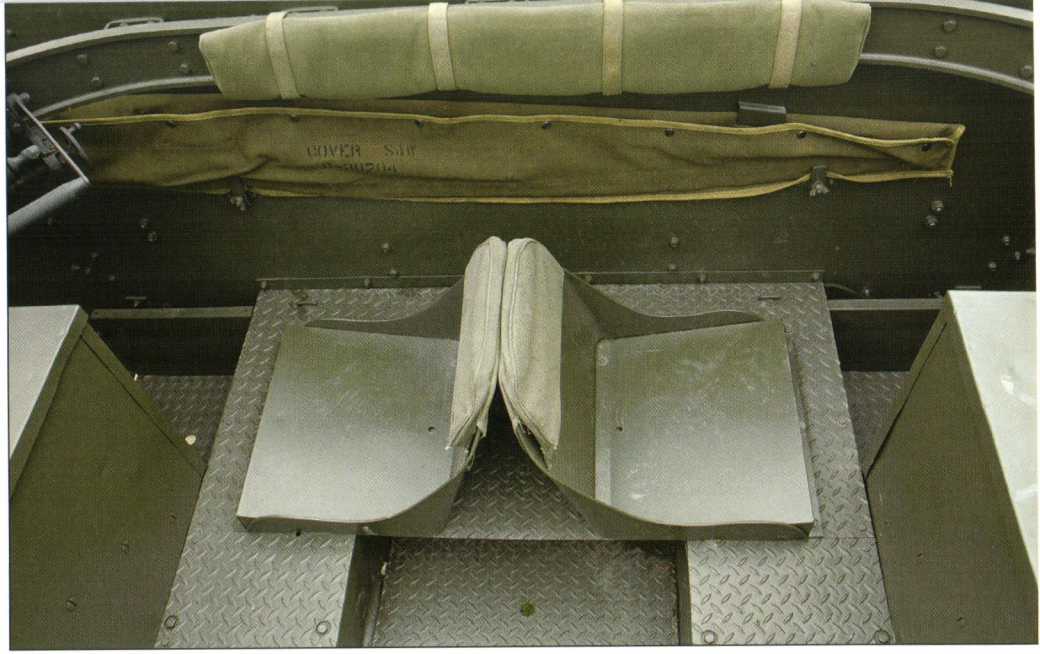
The machine gun ammunition lockers on this late M3A1 have rectangular inner faces that extend down to the floor, instead of being fitted around the wheel well, as on earlier-contract models. The semicircular array of oval-headed bolts secures the locker to the wheel well.

The cradle of this M1917A1 is fitted with the elevation/traverse mechanism, and an elevation scale is painted on the right side of the cradle. If the cradle and carriage were moved to the sloping part of the track to the right, operating the canting handwheel at the bottom right of the carriage would level the carriage.



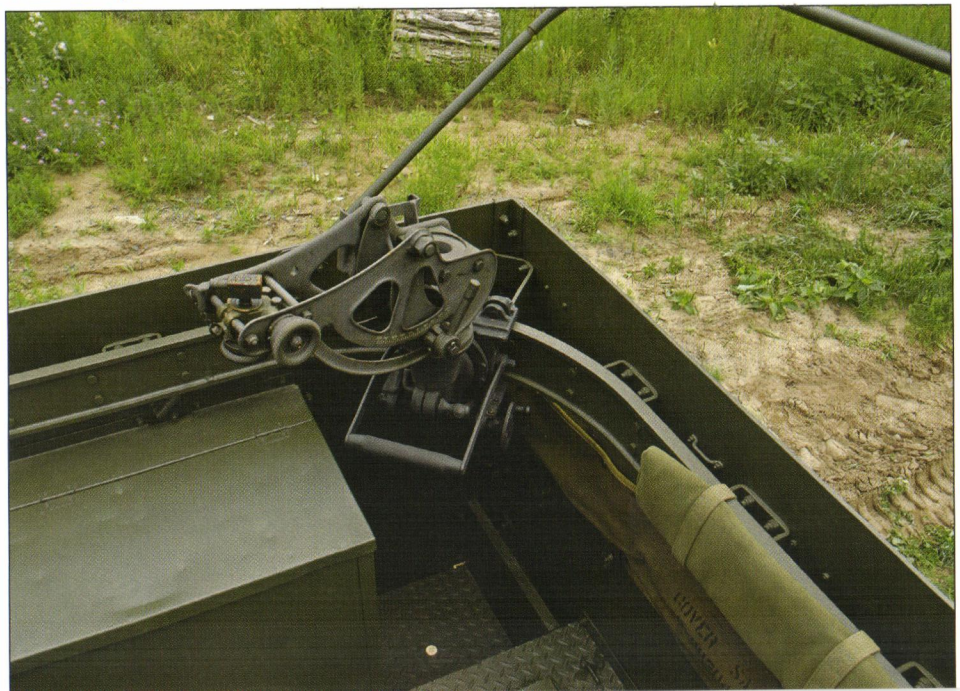
Visible between the body armor and the machine gun track are the mounting brackets for the track, as well as several bow brackets. The lid of the right ammunition locker with its three exterior hinges is at the bottom of the photo.

Hex-bolt patterns are visible on the machine gun track above the left ammunition locker. Also visible are the bottom ends of two bows; note how they pass through brackets near the top of the body and just above the ammunition box.



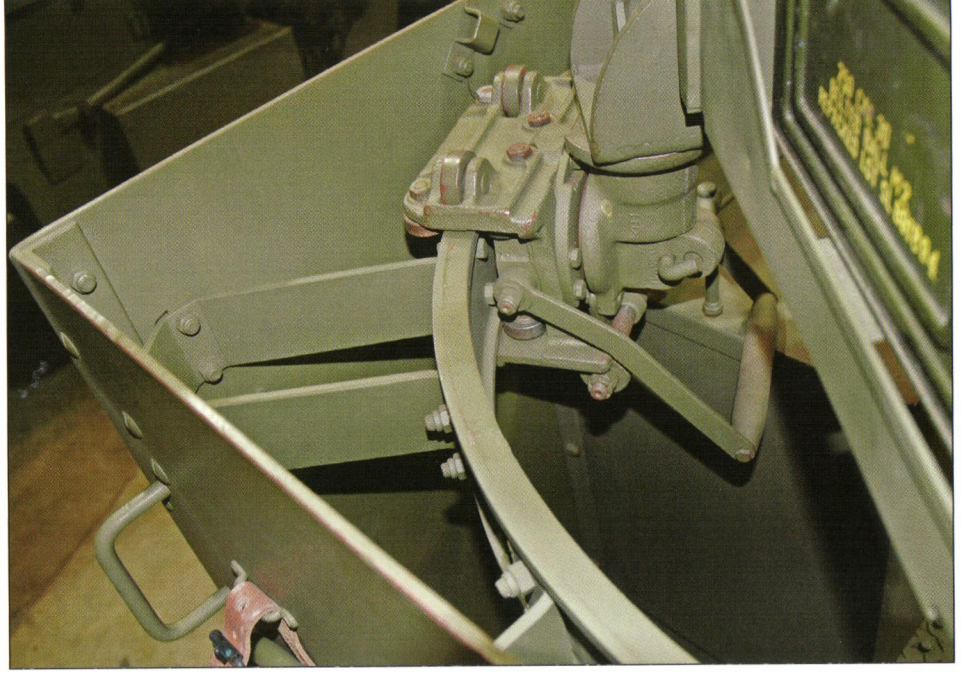
The rear wall of the M3A1 is at the top, with a crosscut handsaw stored in a canvas cover below the crash pad on the machine gun track. Since the seats are mounted directly on the floor, foot wells are provided. These rear seats lack seat cushions.

An M1917A1 machine gun cradle is seen on an M30 carriage, with the gun dismounted, at the right rear corner of a late M3A1. The rearward-slanted rear bow is installed. Mounting brackets for the skate rail are visible between the rail and the rear of the vehicle's body. The crash pads were for the protection of the two rear passengers.



In this downward view of the right rear corner of a late M3A1, the distinctive corner bracket for the machine gun track is visible. Note the four nuts and bolts holding each bracket of the track to the body of the vehicle. At the bottom center of the photo is the top of the M1917A1 cradle, above which are the top rollers of the M30 carriage.

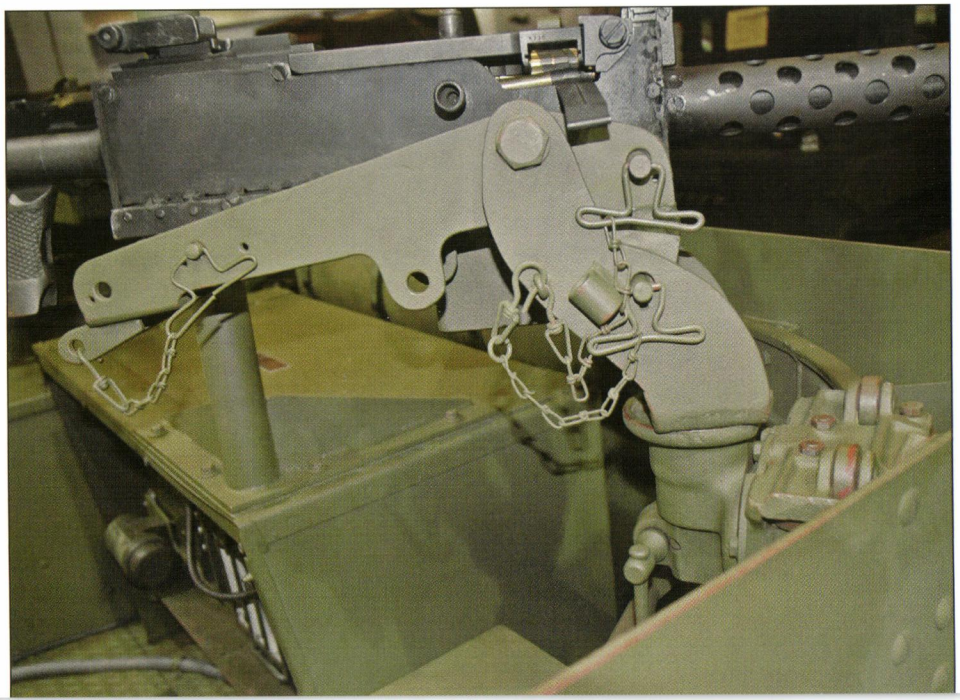
The holder or bracket for the ammunition box is the rectangular plate with the cutout seen in this view of the left side of an M1917A1 machine gun cradle. The carriage is designed to lock the machine gun in place with clamps when not in use, or to allow the free elevation and traverse of the gun when in action.



The top rollers of the carriage make contact with the horizontal top surface of the track. Also visible in this photo is one of two inner horizontal rollers, below the pivot point of the carriage clamp lever. An ammunition box and holder are at the upper right.

Details of the track, mounting brackets, and foot well appear at the left rear corner of a late M3A1. The rear bow is to the right of center.

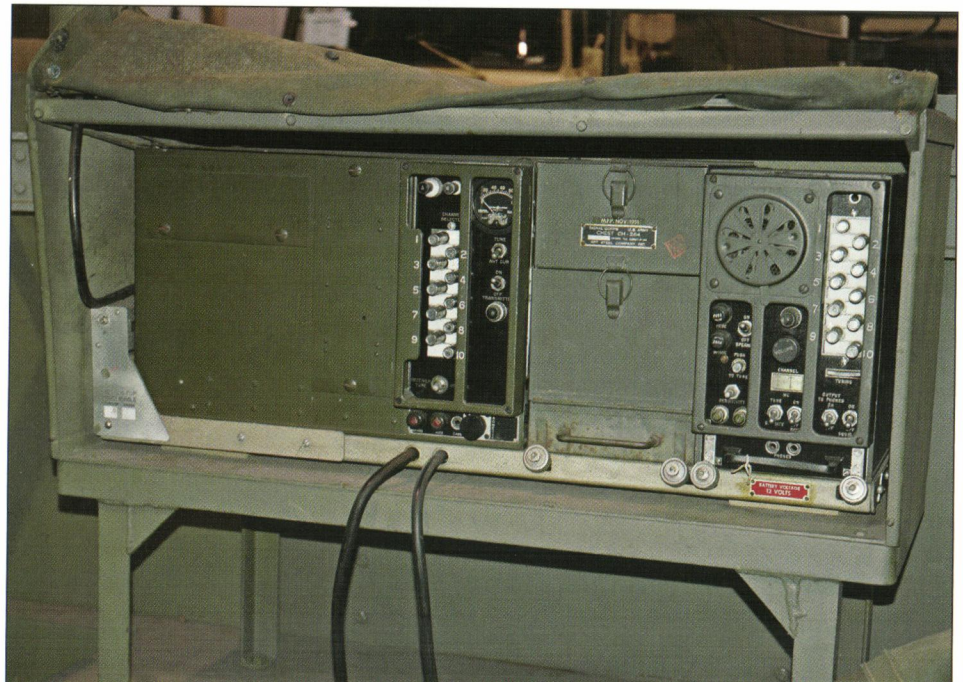
A simplified cradle has been placed on the carriage on a late M3A1. The machine gun is an air-cooled Browning M1919A4 .30-caliber with a perforated cooling sleeve over the barrel. In the background is a metal housing for a radio.



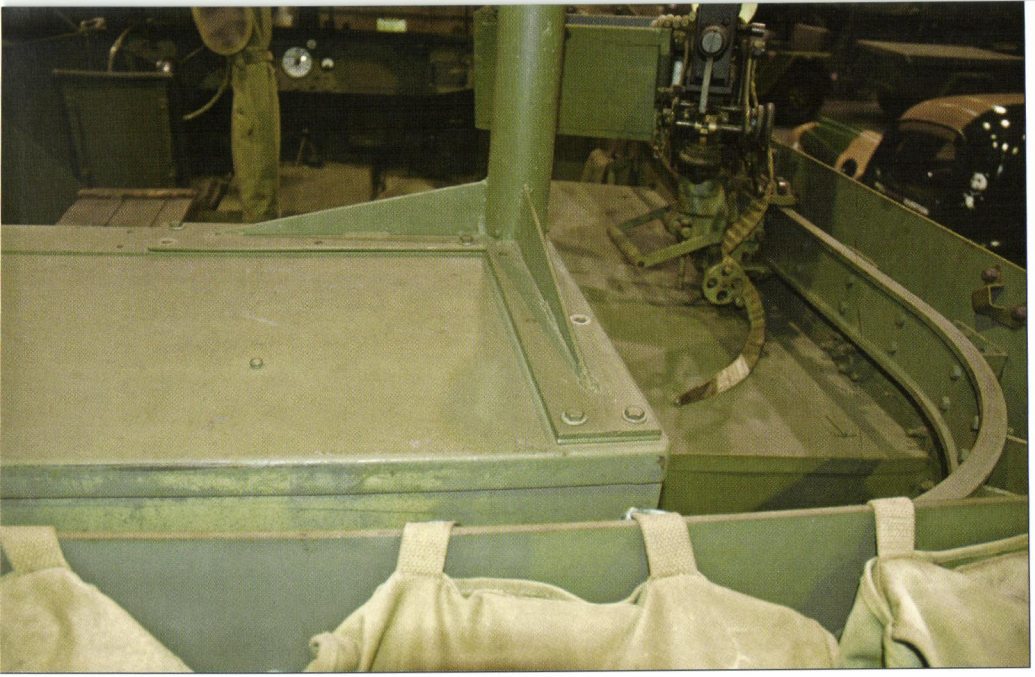
A water-cooled Browning M1917A1 machine gun and cradle on an M30 carriage is seen from behind. Resting on the track clamp handle at the bottom rear of the carriage is the pintle clamp handle, which locks the lateral movement of the pintle and secures the pintle in place.

A variety of types and combinations of radio sets were installed in M3A1 scout cars. This metal housing on legs houses a radio near the rear of a late M3A1. A snap-on canvas cover protected the radios when not in use.

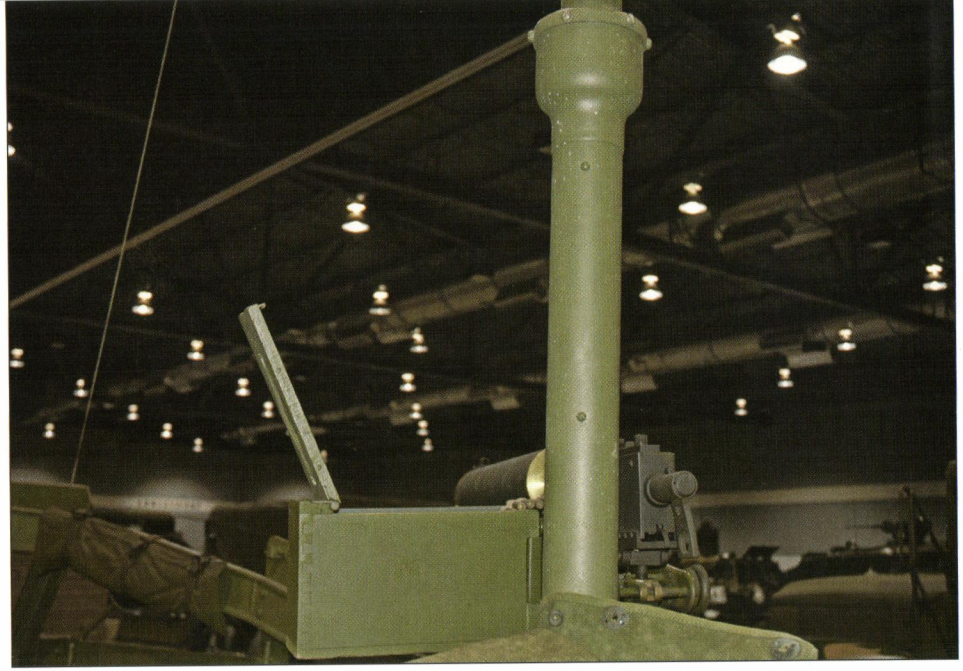
Components of this SCR 528 are, left to right, a BC 604 transmitter (which also included a built-in intercom system), a CH 264 chest, and a BC 603 receiver. The components are secured to an FT-237 mounting shelf.



An antenna mount is secured to the top of the radio housing, seen here from the side. There are two rearward-facing seats and a foot well to the right. Knapsack straps are secured to the machine gun track brackets. Triangular gussets at the bottom of the antenna mast helped strengthen its attachment to the mounting shelf.

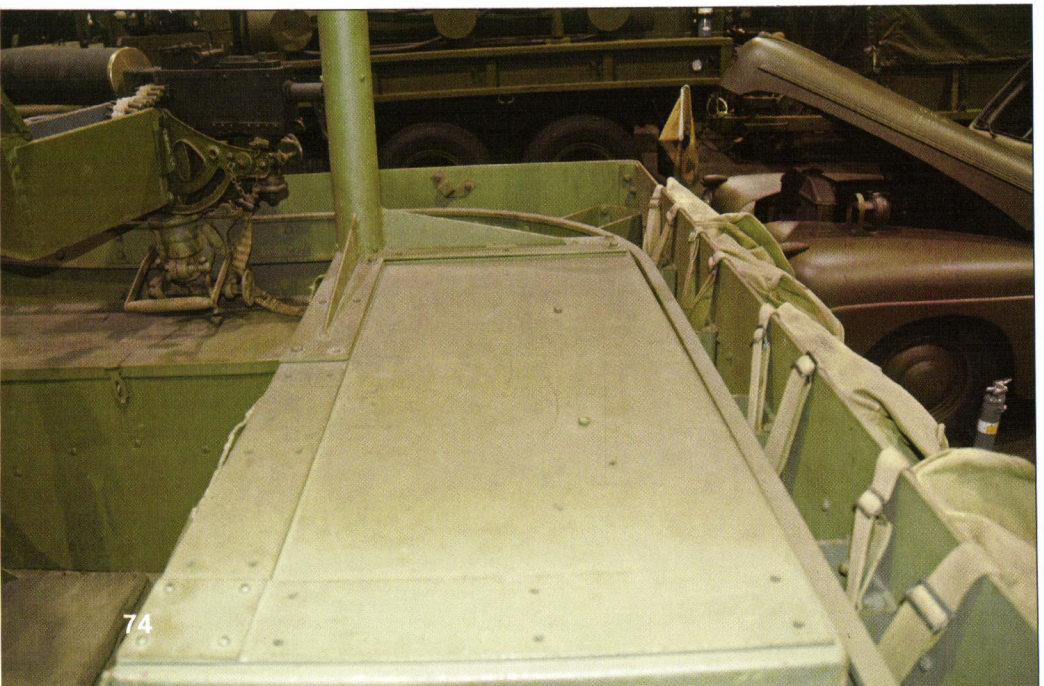


The mounting bracket of the antenna mast on the radio housing is seen here from the rear of the vehicle. The dashboard and the speedometer are visible in the background.

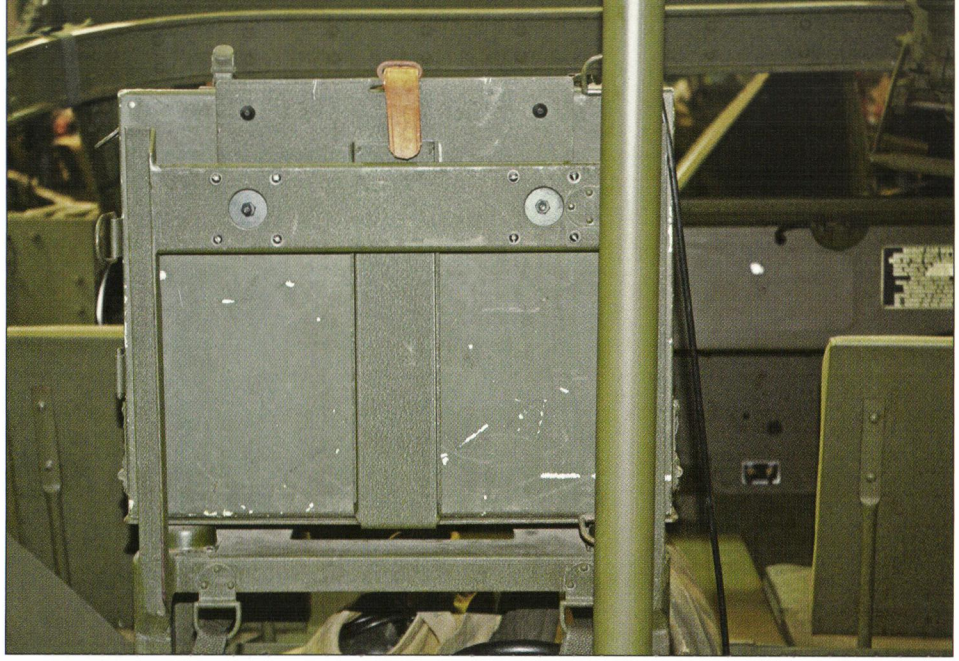


Behind the antenna mast is an M1917A1 machine gun with open ammunition box next to it.

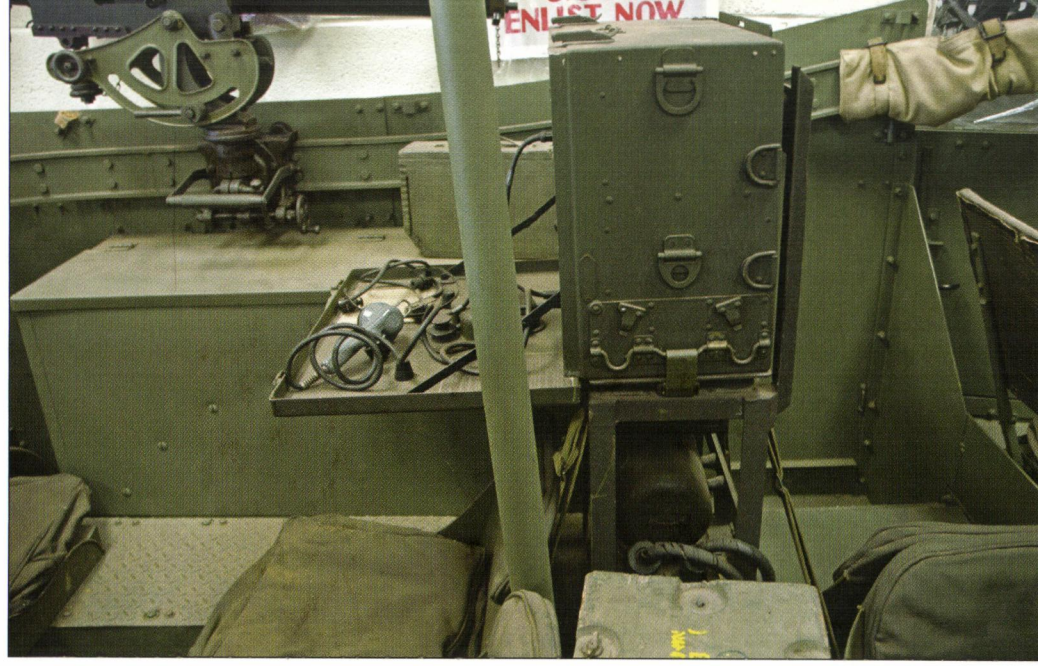
The top of the radio housing and the mounting bracket of the antenna mast are in the center of the picture. Below the M1917A1 machine gun mount is the right ammunition locker. The brackets that held the skate rail to the scout car's body made handy hangers for stowed gear such as musette bags and knapsacks.



A view of the interior of a late M3A1 scout car, looking forward from above the radio housing. The vehicle's stock antenna mast is between the two rear-facing seats. The front passenger's seat is at the top center, the ammunition locker is to the right, and to the upper left is the rear of a BC 654A transmitter-receiver set.



The BC 654A radio, seen here from the rear, is mounted on a rack that is secured to the floor of the vehicle with webbing straps. The straps are fastened to the D-rings at the bottom of the photo.



The BC 654A radio is seen from the side, facing toward the right side of the vehicle. The front cover of the radio folds down to form a table.

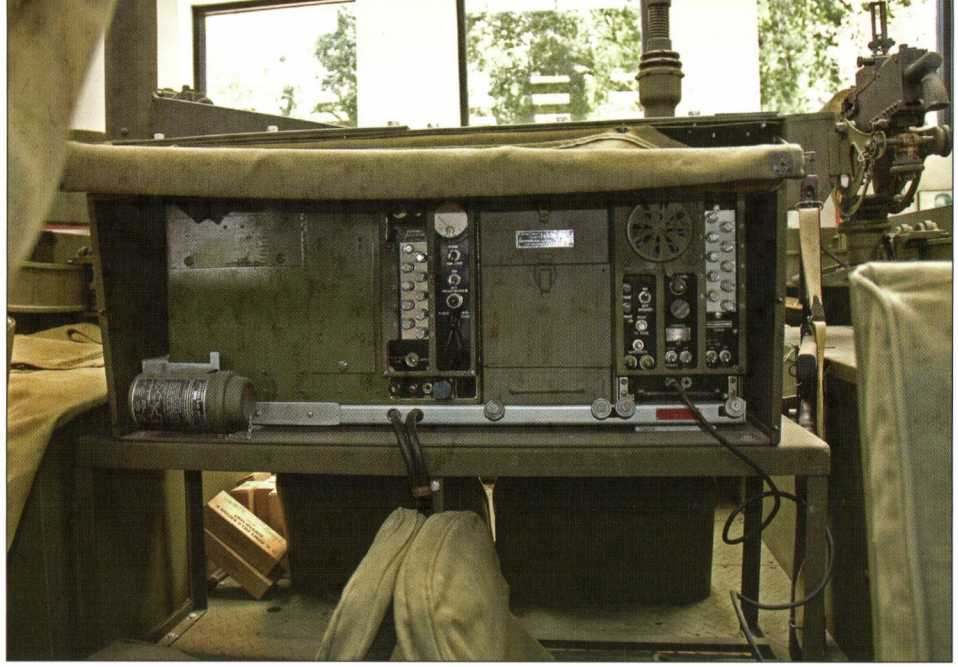
The dynamotor and power supply for the BC 654A are stored at the bottom of the rack, in this view toward the rear of the vehicle. The radio is mounted to the left of the centerline of the vehicle, allowing space to the right for the crew to get around it.

The webbing straps that hold down the rack are seen in this rear view of the housing for the BC 654A (top) and the rack. The cylindrical object at the center is the dynamotor, a combination motor/generator. Below it is the power unit. Together, these devices supplied the proper voltage and amperage of electricity to the radio.

The BC 654A, manufactured by the Crosley Corporation, is seen from the front. The top of the unit is the receiver, and the lower component is the radio transmitter. Two latches on the top of the housing secure the front when the radio is closed. A plate containing operating instructions is visible on the opened lid at the lower right.

In another configuration of radio equipment, this late M3A1 has an SCR 528 radio transmitter/receiver installed on a metal table behind the driver's and passenger's seats (left).

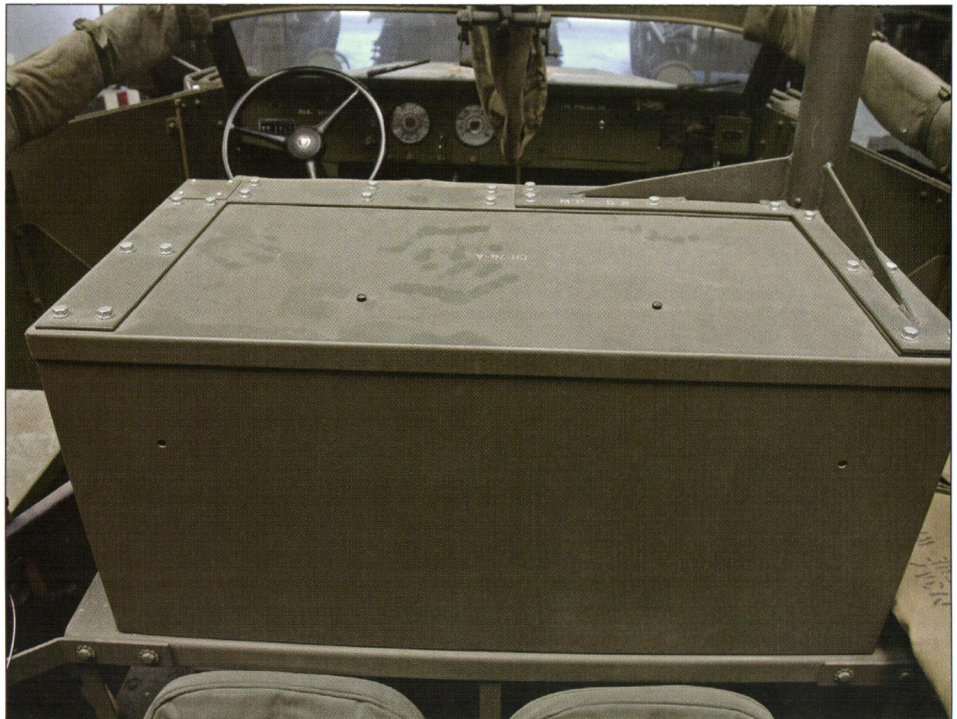
An antenna mast is bolted to the top of the housing of the SCR 528. A Thompson submachine gun is stashed between the radio table and the ammunition locker to the lower right. Another radio set, an SCR 506, is installed to the rear of the interior of the vehicle (far right).



The canvas cover has been raised on this SCR 528 set. The canister on the left of the radio is an A-62 phantom antenna, used to tune and test the radio set without actually transmitting – and hence without potentially revealing the vehicle's position.

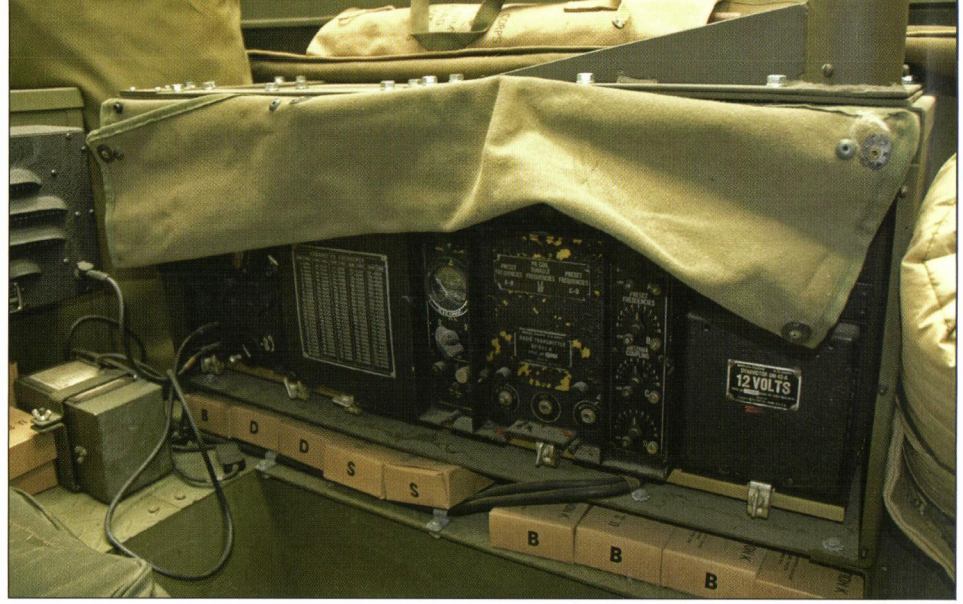
The top and side of the SCR 528 housing are seen here in detail.

The driver's compartment apears in the background in this shot of the rear and top of the SCR 528 housing. (Chris Hughes)



At the rear of a late M3A1 scout car is this SCR 506. It was an AM long-range command radio comprising a BC 653A transmitter, BC 653 receiver, and BC 658 interphone switch box. At the bottom of the photo are the rearmost, rear-facing seats and the rear foot well. (Chris Hughes)

Arrayed next to and under the SCR 506 set are K-ration boxes (marked B, D, and S on the ends of the boxes for breakfast, dinner, and supper). A loudspeaker is attached to the ammunition locker, and a Signal Corps flag kit to the rear of the radio housing. An antenna mast is on top of the housing, and to the upper right is a .30-caliber ammunition box.



At the lower right of the SCR 506 set is a Signal Corps DM 42A dynamotor. Toward the left of the set is a channel vs. frequency table.

Some items of stored equipment issued with the M3A1 scout car are displayed, including an inspection lamp, Alemite grease gun, technical manuals, starting crank, double-ended and socket wrenches, screwdrivers, pliers and bags.

M3A1 General Data

WEIGHT (unladen)	9,100 pounds
LENGTH	221.5 inches
WIDTH	80 inches
HEIGHT	78.5 inches
TREAD FRONT/REAR	63.25 inches / 65.25 inches
CREW	6 to 8
TIRE SIZES	8.25-20 inches
MAX SPEED	50 miles per hour
FUEL CAPACITY	54 gallons
RANGE	250 miles
ELECTRICAL	12 volt, negative ground
TRANSMISSION SPEEDS	4 forward / 1 reverse
TRANSFER SPEEDS	2
TURNING RADIUS	28 feet
ARMAMENT	1 x .50 cal., 2 x .30 cal. machine guns

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